

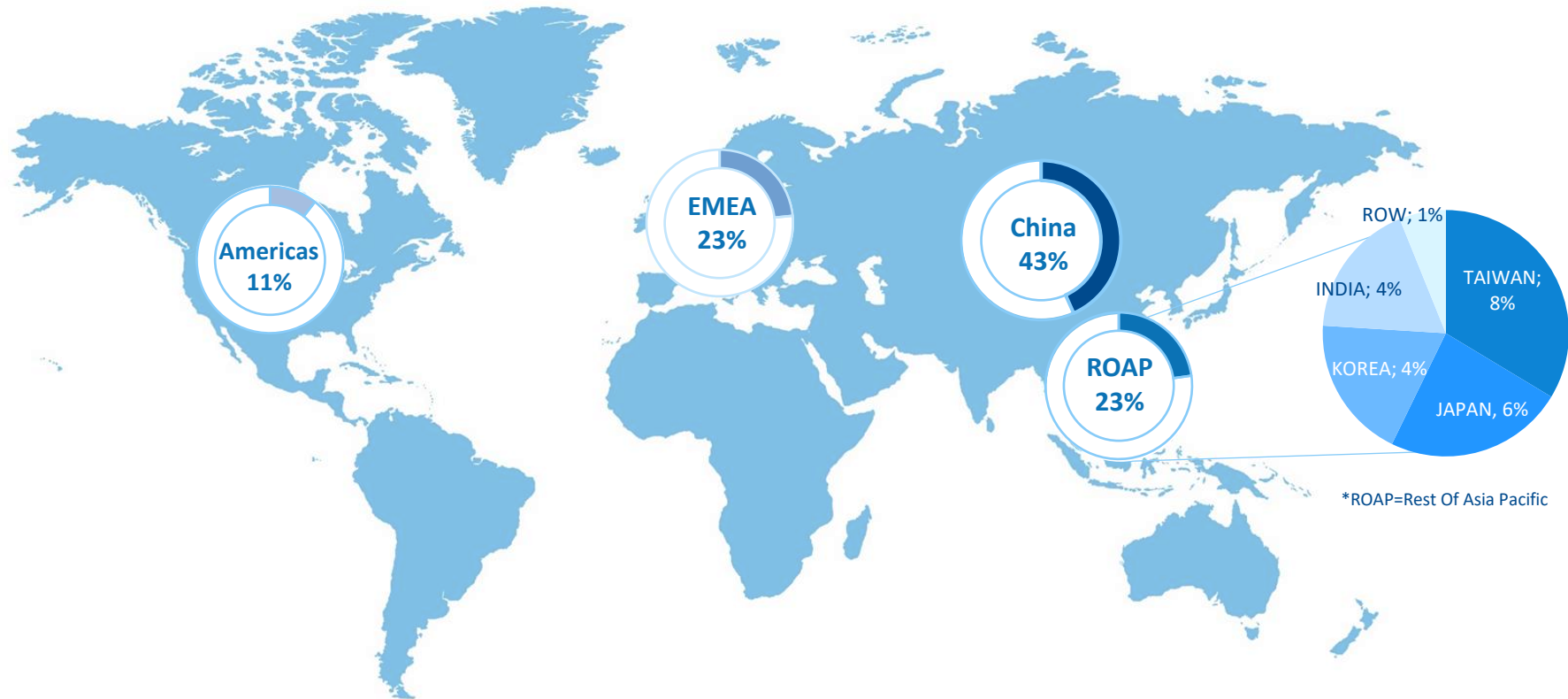
TAIWAN SEMICONDUCTOR PRESENTATION

June 2024

2023 REVENUE BY END MARKET



2023 REVENUE BY REGION



OUR CUSTOMERS AND PARTNERS



Automotive

(Behr-)Hella
 Bosch
 BYD
 CATL
 Continental
 Delphi
 Denso
 Dräxlmaier
 Faurecia
 Geely Auto
 Harman
 Hyundai Mobis
 IMASEN
 Kostal
 Lear
 Lumileds
 Magna
 Magneti Marelli
 Mando
 Minda
 Motherson Group
 Panasonic AS
 Sedemac



Consumer

Bosch Siemens
 Braun
 Daikin
 Dyson
 Electrolux
 Haier
 Hitachi Appliance
 LG
 Midea
 Miele
 Onkyo
 P&G
 Panasonic
 Philips
 Samsung
 Sharp
 Sony
 Toshiba
 Whirlpool



Industrial/Telecom

ABB
 Bosch
 Cisco
 Danfoss
 ebm papst
 Ericsson
 General Electric
 Grundfos
 Huawei
 Lixil
 Mitsubishi
 Nokia Siemens
 OMRON
 Panasonic
 Rockwell
 Schneider
 Siemens
 TOTO



Lighting

BAG
 Helvar
 Ledvance
 LUTRON
 Osram
 Panasonic Lighting
 Sharp Lighting
 Signify (Philips)
 Tridonic
 Universal Lighting
 Vossloh-Schwabe



Power Management

Acbel
 Chicony
 Cosel
 Delta Electronics
 Emerson/Astec
 Flex Power
 GE Energy
 Lite On Power
 MinebeaMitsumi
 Qisda
 Sanken
 Tabuchi
 TDK/Lambda
 TPV
 Wistron

Channel Partner



CAMEL GECO ELETTRONICA S.r.l.

PRODUCT PORTFOLIO AND ROADMAP

COMPREHENSIVE PRODUCT PORTFOLIO

• DISCRETE



Rectifier

- Schottky Rectifier
- Bridge Rectifier
- Standard Rectifier
- Fast Recovery Rectifier
- High Efficiency Rectifier
- Super Fast Recovery Rectifier
- Ultra Fast Recovery Rectifier

Protection Diode

- TVS
- ESD Protection

MOSFETs

- Automotive MOSFETs
- N-Channel MOSFETs
- P-Channel MOSFETs
- Complementary MOSFETs
- Small-signal MOSFETs

Small-Signal Product

- Zener Diode
- Switching Diode
- Schottky Diode

General Purpose and Low $V_{CE(sat)}$ Transistor

- NPN Transistor
- PNP Transistor

COMPREHENSIVE PRODUCT PORTFOLIO

- **POWER MANAGEMENT**
- **SENSOR**
- **WIDE BANDGAP**

Amplifier & Comparator

Voltage Regulator

- Automotive Voltage Regulator
- Linear Voltage Regulator
- Switching Regulator

LED Driver

- Automotive LED driver
- AC-DC LED driver
- DC-DC LED driver
- Linear LED driver

Voltage Reference

Magnetic Sensor

- Omni-polar
- Uni-polar
- Latch
- Linear

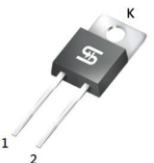
Wide Bandgap

- SiC Schottky Diode
- GaN Transistor

SCHOTTKY (PLANAR, TRENCH, SIC)

SiC Schottky Diode 650V G1 (Non-Automotive)

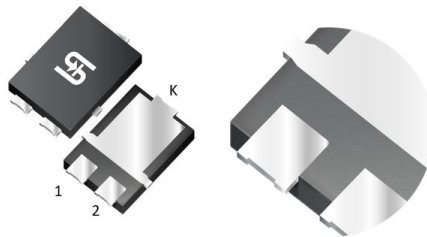
Released

Part Number	Package	VR min (V)	IF max (A)	Tj 25		Tj 175		Config
				VF typ (V)	VF max (V)	VF typ (V)	VF max (V)	
TSCDF06065G1	 ITO-220AC-2L	650V	6A	1.3	1.45	1.56	1.8	Single
TSCDF08065G1		650V	8A	1.3	1.45	1.56	1.8	Single
TSCDF10065G1		650V	10A	1.3	1.45	1.56	1.8	Single
TSCDF12065G1		650V	12A	1.3	1.45	1.56	1.8	Single
TSCDF16065G1		650V	16A	1.3	1.45	1.56	1.8	Single
TSCDF20065G1		650V	20A	1.3	1.45	1.56	1.8	Single
TSCDT06065G1	 TO-220AC-2L	650V	6A	1.3	1.45	1.56	1.8	Single
TSCDT08065G1		650V	8A	1.3	1.45	1.56	1.8	Single
TSCDT10065G1		650V	10A	1.3	1.45	1.56	1.8	Single
TSCDT12065G1		650V	12A	1.3	1.45	1.56	1.8	Single
TSCDT16065G1		650V	16A	1.3	1.45	1.56	1.8	Single
TSCDT20065G1		650V	20A	1.3	1.45	1.56	1.8	Single
TSCDH16065G1	 TO-247-3L	650V	16A	1.3	1.45	1.56	1.8	Common Cathode
TSCDH20065G1		650V	20A	1.3	1.45	1.56	1.8	Common Cathode
TSCDH30065G1		650V	30A	1.3	1.45	1.56	1.8	Common Cathode
TSCDH40065G1		650V	40A	1.3	1.45	1.56	1.8	Common Cathode

Trench Schottky 100V & 120V SMPC4.6U

Released

TO-277A (SMPC4.6U)



Key Features:

- AEC-Q101 qualified (175°C)
- Wettable flank for AOI
- Max. junction temperature 150°C & 175°C
- Low power loss, high efficiency
- MSL 1
- RoHS Compliant
- Halogen-Free

Applications:

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- Low-voltage DC-DC converter

Tj 150°C

Part Number	V _{RRM} (V)	I _F (A)	V _F @ T _A = 25°C		I _R @T _A = 25°C max. (μA)	I _R @T _A = 150°C max. (mA)	I _{FSM} @ 1ms (A)	Q _C Typ (nC)
			Typ. (V)	Max. (V)				
TSUP5102	100	5	0.67	0.70	15	10	425	494
TSUP10102		10	0.69	0.72			720	887
TSUP15102		15	0.75	0.78			720	885
TSUP12102	120	12	0.78	0.81			720	891

Tj 175°C

Part Number	V _{RRM} (V)	I _F (A)	V _F @ T _A = 25°C		I _R @T _A = 25°C max. (μA)	I _R @T _A = 175°C max. (mA)	I _{FSM} @ 1ms (A)	Q _C Typ (nC)
			Typ. (V)	Max. (V)				
TSUP8H100H	100	8	0.71	0.75	50	10	510	583
TSUP10H100H		10	0.71	0.75			680	732
TSUP12H100H		12	0.70	0.75			700	883
TSUP15H100H		15	0.72	0.75			700	1014
TSUP8H120H	120	8	0.73	0.76			510	462
TSUP10H120H		10	0.73	0.76			680	615
TSUP12H120H		12	0.72	0.76			700	744
TSUP15H120H		15	0.72	0.76			700	832

SCHOTTKY BARRIER RECTIFIER PACKAGE LINEUP

Package types	20V	30V	40V	45V	60V	80V	100V	120V	150V	200V
DO-201AD	V	V	V		V		V		V	V
DO-204AL (DO-41)	V	V	V		V		V		V	
DO-214AA (SMB)	V	V	V		V		V		V	V
DO-214AB (SMC)	V	V	V		V		V		V	V
DO-214AC (SMA)	V	V	V		V		V		V	V
ITO-220AB	V	V	V	V	V	V	V	V	V	V
ITO-220AC	V	V	V	V	V		V		V	V
Micro SMA	V	V	V		V					
SOD-123HE	V	V	V		V		V		V	V
SOD-123W			V		V		V		V	V
SOD-128			V		V		V		V	V
Sub SMA	V	V	V		V		V		V	
Thin SMA			V		V		V		V	V
TO-220AB	V	V	V	V	V	V	V	V	V	V
TO-220AC	V	V	V	V	V		V		V	V
TO-247AD (TO-3P)	V	V	V	V	V		V		V	V
TO-262 (I ² Pak)							V			
TO-263AB (D ² -PAK)	V	V	V	V	V		V		V	V
TO-277A (SMPC)				V	V		V			

AEC-Q qualified available

Power Rectifier Devices

Bridge & Rectifier

STD BRIDGE DIODE PRODUCT LINEUP

(A)	ABS	MBS	DBL DBLS	YBS	TBS	KBPF	GBL	D3K	KBJL	TS4K (KBJ)	GBU	TS6PL	TS6P (GBJ)	GBPC (-M,-W)
														
50													●▲	●
40													●	●
35													●	●
25											●▲		●▲	●
20												●	●	
15											●▲	●	●▲	●
10									●	●	●▲	●	●	
8					●			●			●		●	
6					●				●	●	●		●	
4					●◎	●	●	●		●	●			
3				●◎		●		●						
2	●◎		●	●		●	●	●						
1.5	●		●											
1	●○		●◎											
0.8		●◎												

●: Standard
◎: Fast & Her

○: Super & Ultra fast
▲: LLD

▲: In development

SMD TYPE RECTIFIER PRODUCTS LINEUP

(A)	uSMA	SOD-123W	SOD-123HE	Sub SMA	SOD-128	SMA (DO-214AC)	SMB (DO-214AA)	SMPC4.6U	SMC (DO-214AB)	TO-263 (D ² PAK)
										
30										◆▲
20										◆▲
16										○
15									●	
12									●	
10								◎	●	●
8								●◎◆	●	○
6							◆	●◎◆	◆	
5							●		●◎	○
4							◆	●◎◆	●○◎◆	
3					○◎◆	◆	●○◎◆	●◆	●○◎◆	
2	◆	◆	◆		●○◎◆	○◆	●○◎◆			
1,5		●○	○			●◎				
1.2			●◎							
1	●○◎◆	●○◎◆	●○◆	●○◎	●○◎◆	●○◎◆	●○◎			
0.8		●○		◎						
0.5				◎						

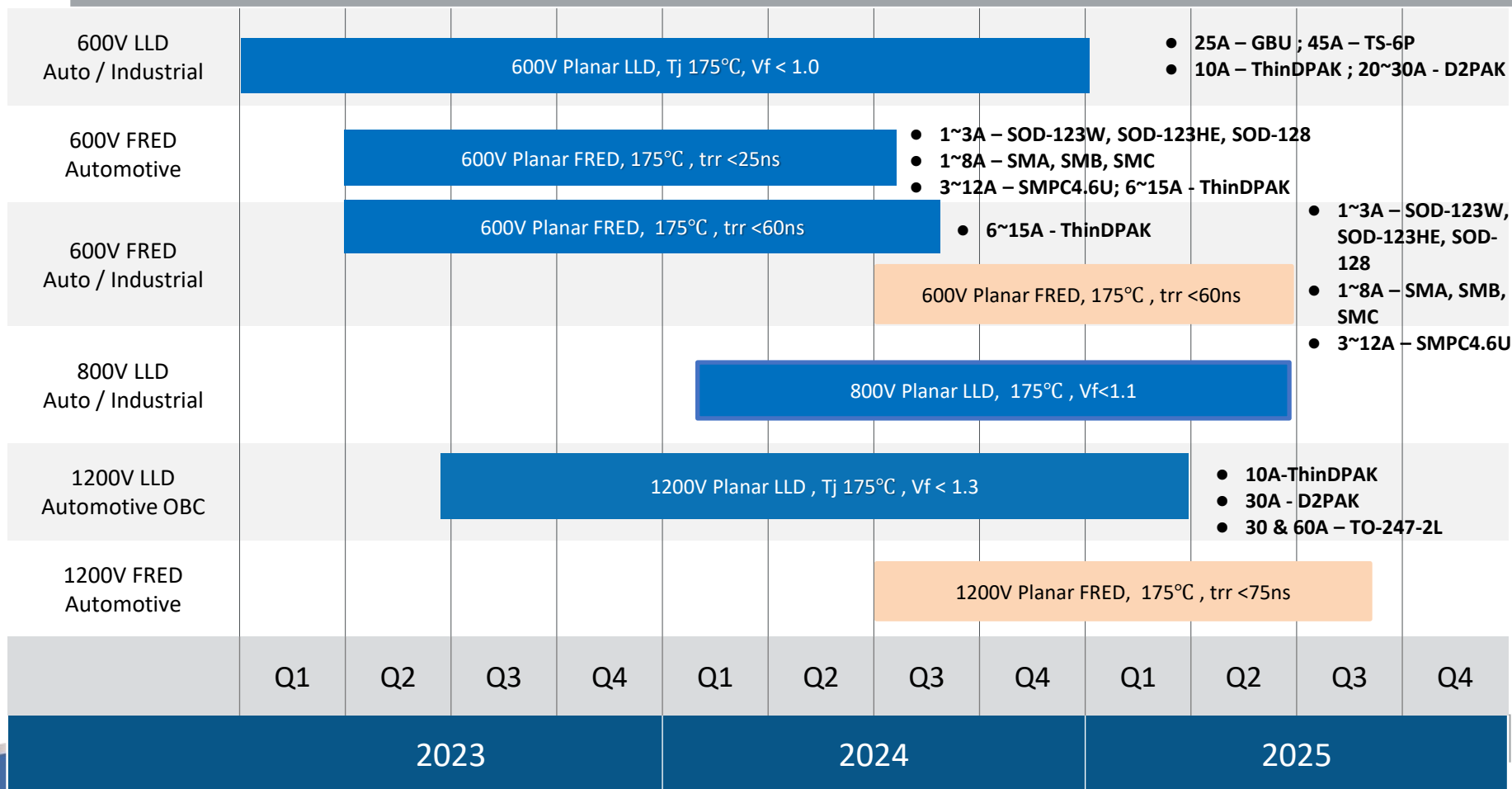
●: Standard
◎: Fast & HER

○: Super & Ultra fast
▲: LLD

◆: FRED
▲: In development

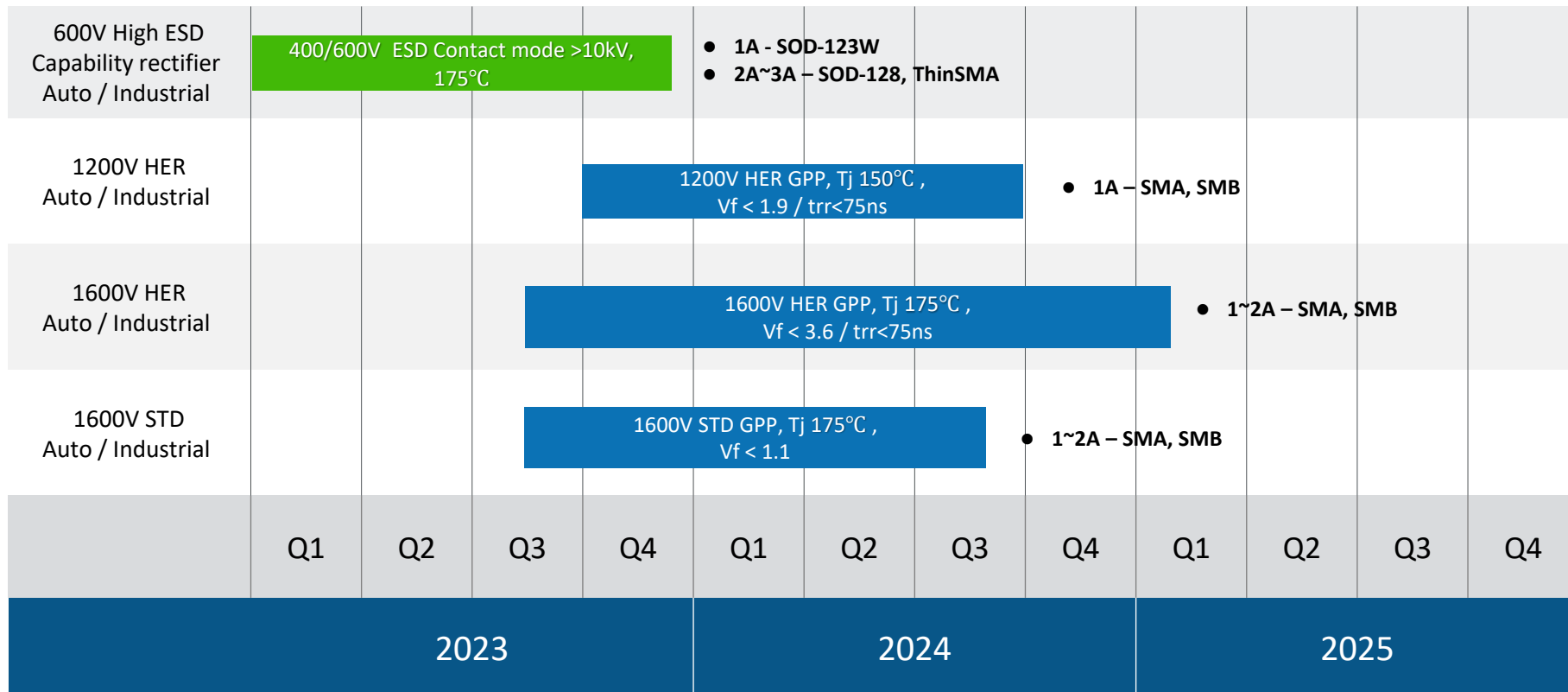
Product development roadmap

Released Development Plan



Product development roadmap

Released Development

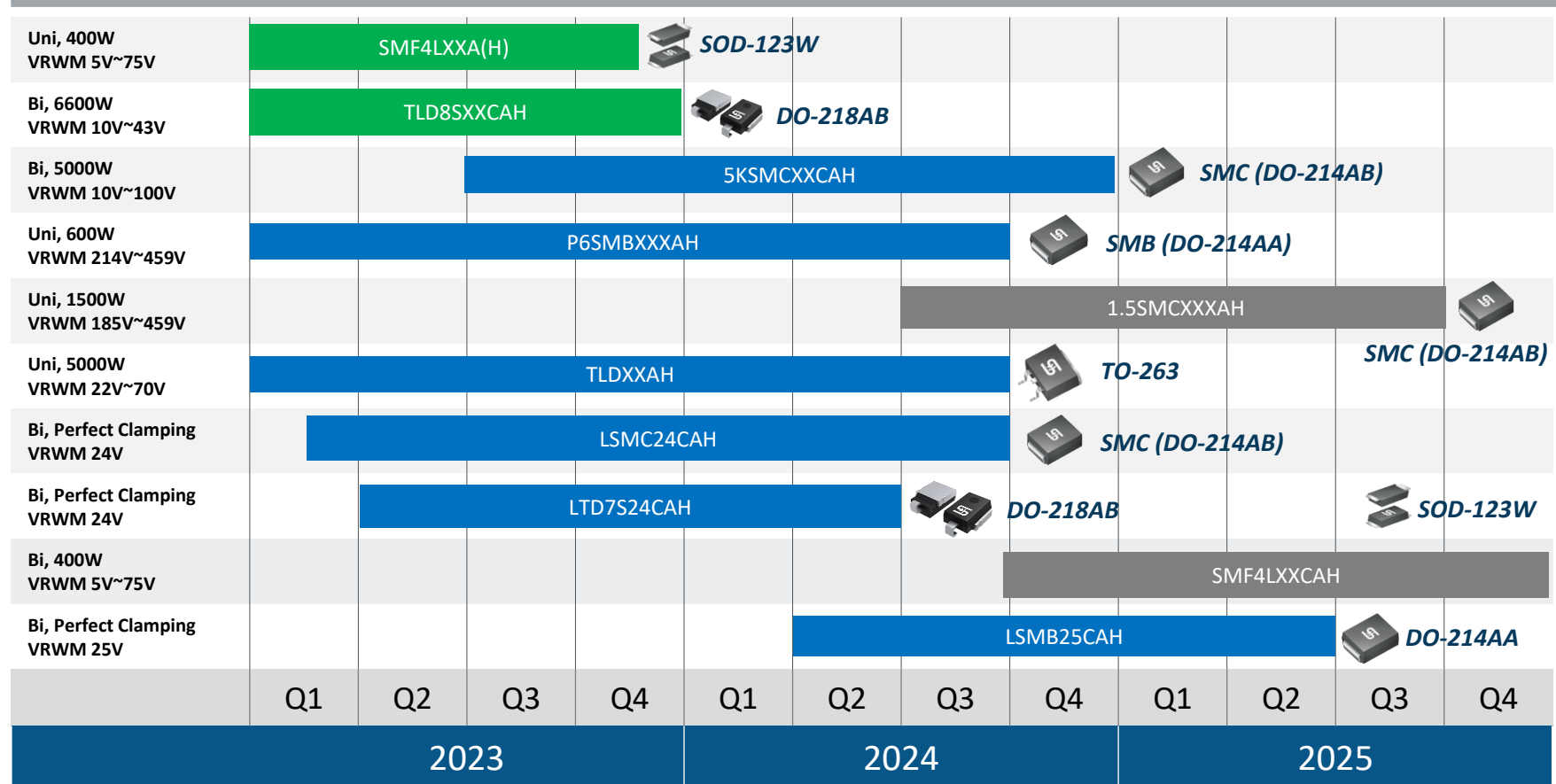


Circuit Protection Device

TVS & ESD & Zener

TVS DIODE DEVELOPMENT ROADMAP

■ Released ■ Development ■ Planning



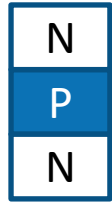
LOW CLAMP (SNAPBACK) TVS DIODE

Low clamp TVS diode adopt BJT structure:

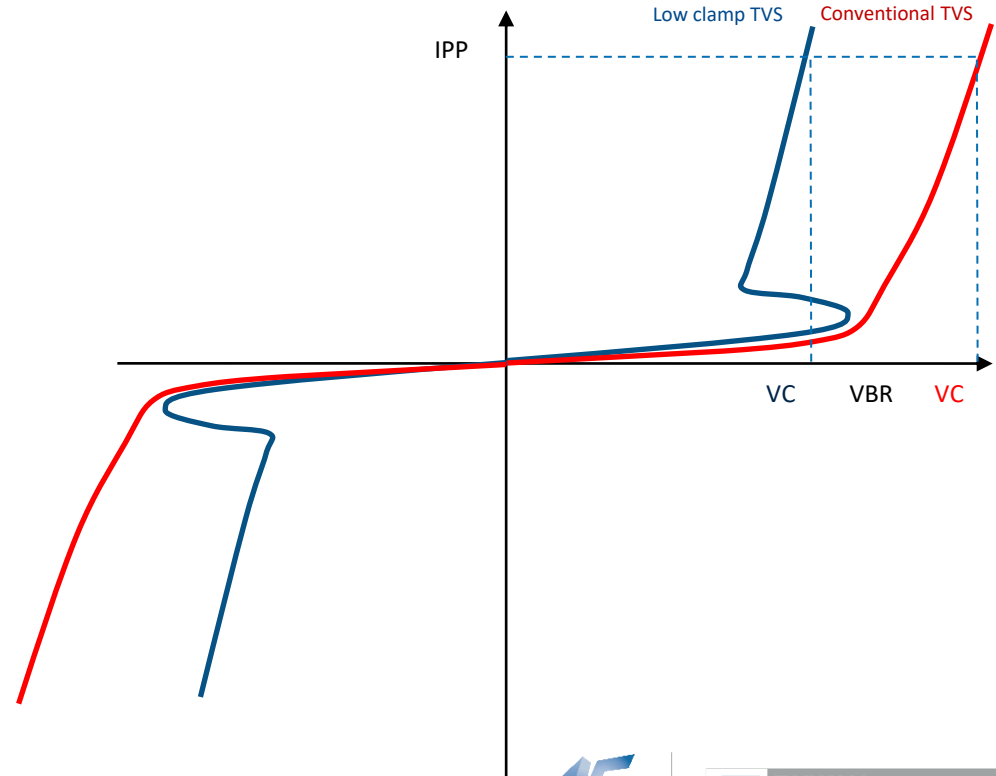
Conventional TVS



Low clamp TVS

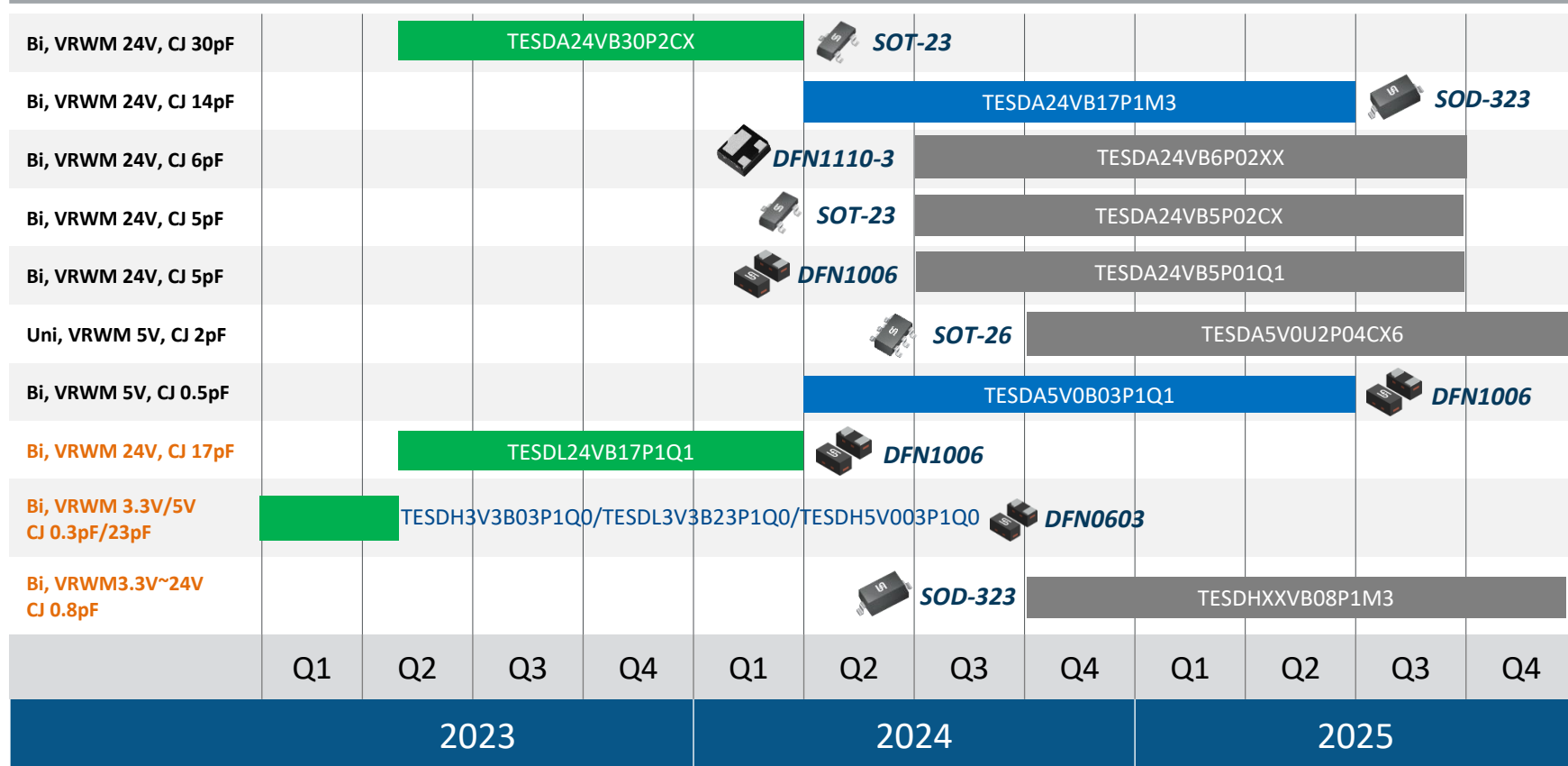


- Low clamp TVS snapback characteristics – Fold back after primary breakdown and then 2nd breakdown to V_c .
- The low clamp ratio provide lower V_c at high I_{pp} , help to protect the circuit load with lower voltage stress for higher efficiency.
- Designer could select lower working voltage components such as IC, MOSFET, Capacitor...etc
- Potential application for BLDC, automotive 24V, 48V power train



ESD DIODE DEVELOPMENT ROADMAP

■ Released ■ Development ■ Planning



Note : ● Industrial Grade

(Authorized Italian Distributor)

ESD PROTECTION PACKAGE LINEUP

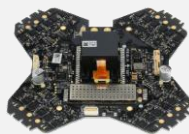
				
DFN1006-2L	DFN2510-10L	DFN0603-2L	DFN1006-3L	SOD323
(L x W x H) In mm 1x0.6x0.53	(L x W x H) In mm 2.6x1.1x0.6	(L x W x H) In mm 0.6x0.3x0.3	(L x W x H) In mm 1x0.6x0.51	(L x W x H) In mm 1.8x1.3x1.1
				
SOT-23	SOT-363	SOT-26	SOD-523F	
(L x W x H) In mm 3x1.4x1.1	(L x W x H) In mm 2.2x1.3x1	(L x W x H) In mm 3.1x1.7x1.4	(L x W x H) In mm 1.7x0.9x0.77	

MOSFETs

DESIGN TARGET APPLICATION

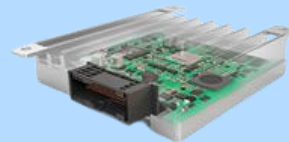
Motion Control

- Drone, Fan, BLDC motor and Power tool.
- 30V – 100V MOSFETs



Switching Power Supply

- DC Brick, Server & Telecom and Networking power.
- 30V – 150V MOSFETs



Automotive

- 12V/24V/48V Battery System
- Lighting, Wiper, Motor and DCU/ECU
- 40V – 100V MOSFETs

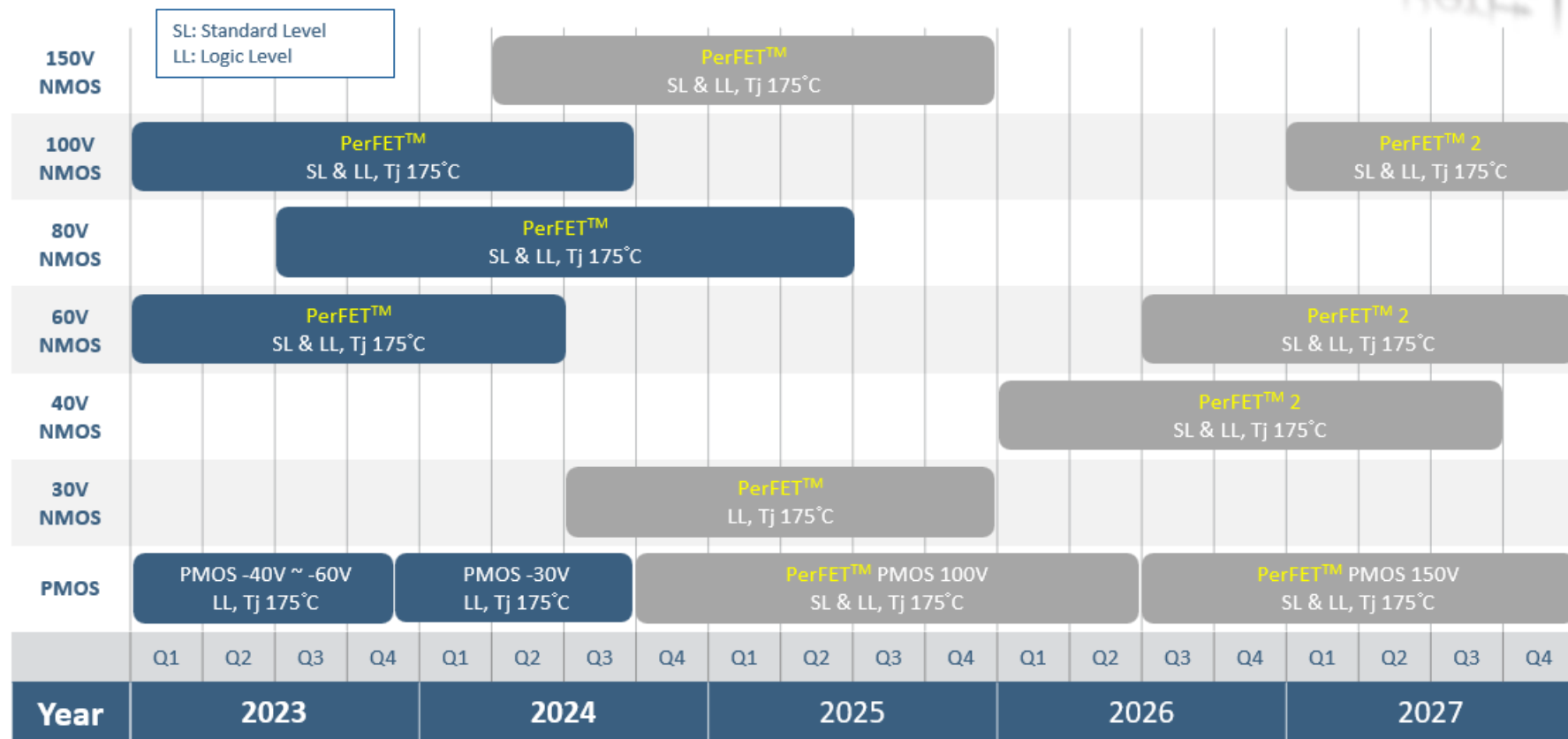


MOSFET TECHNOLOGY ROADMAP

Developing

Plan

PerFET™

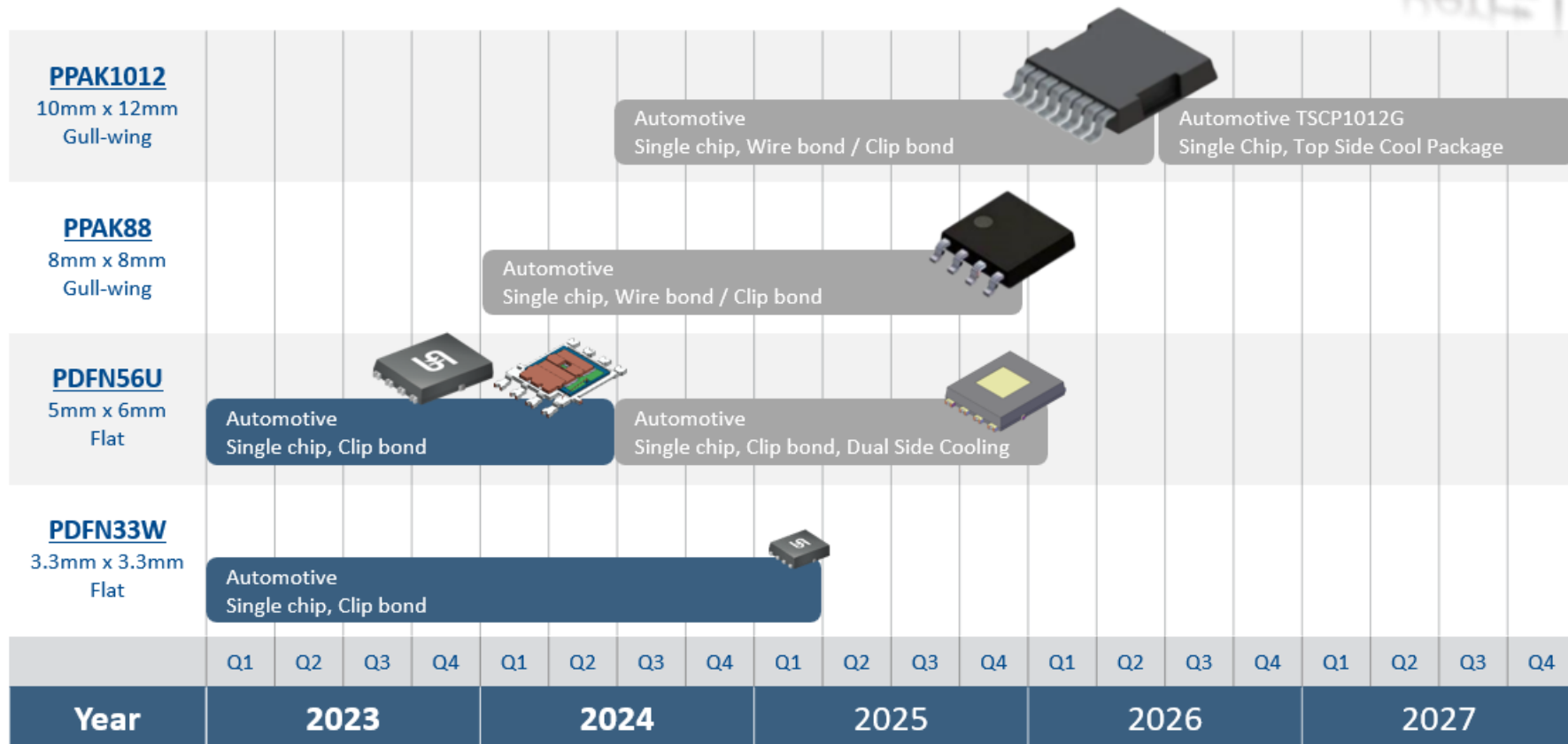


PACKAGE ROADMAP

Developing

Plan

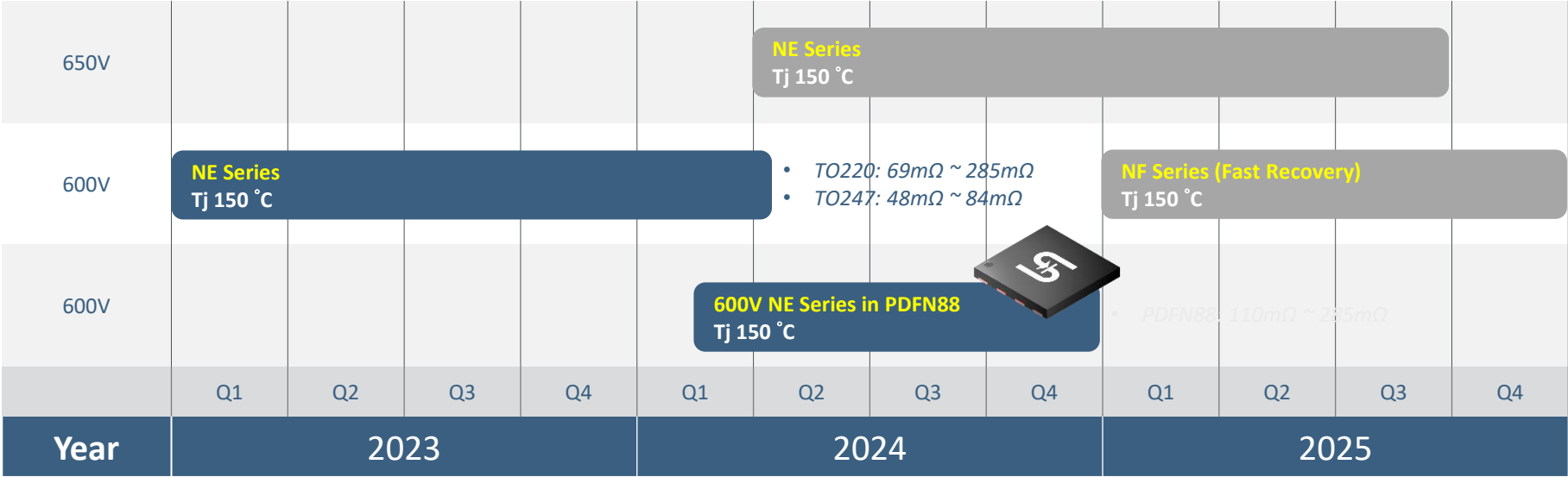
PerFET™



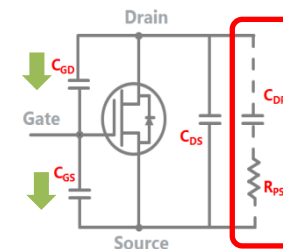
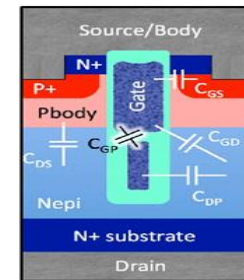
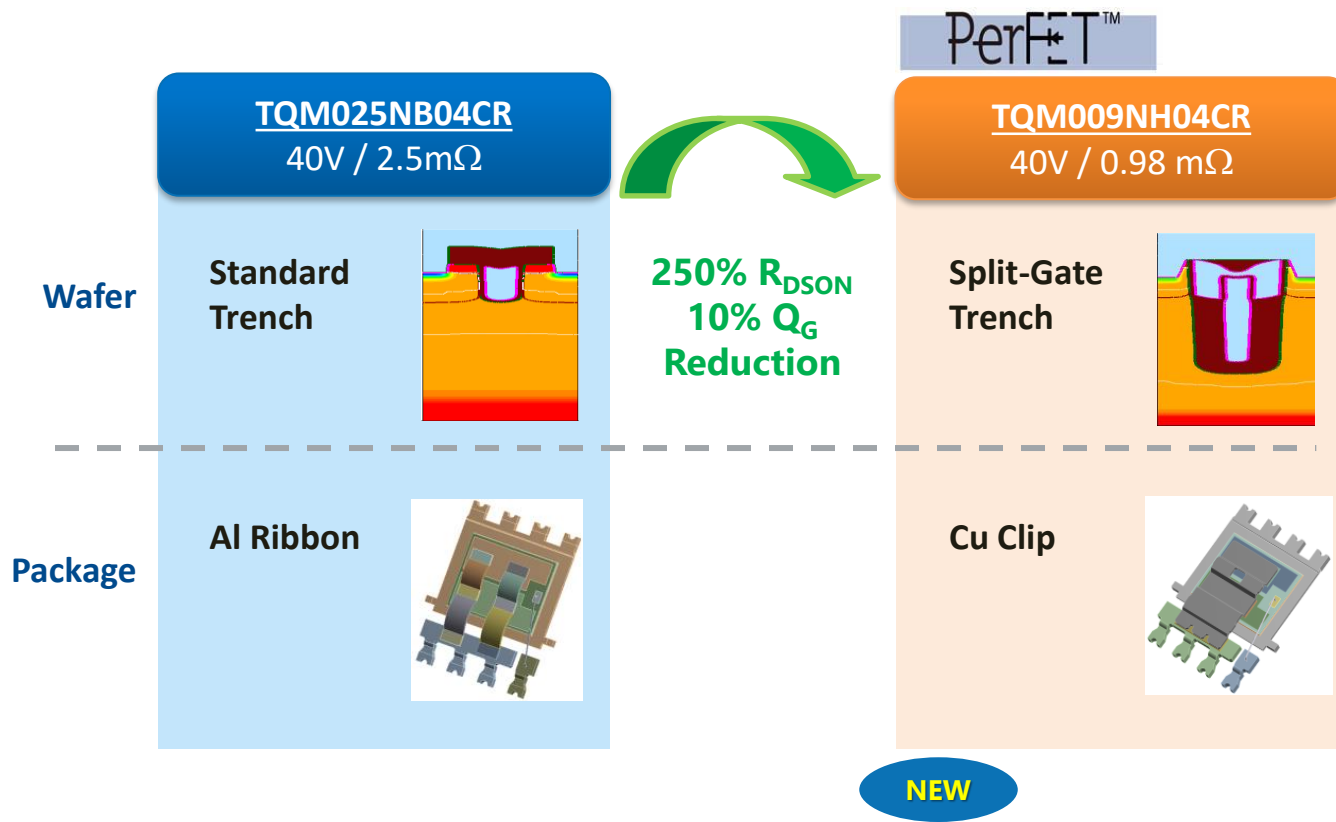
HV MOSFET TECHNOLOGY ROADMAP

Developing

Plan



AUTOMOTIVE MOSFETS / TECHNOLOGY DEVELOPMENT



Benefit of Split-Gate

- Ultra low $R_{DS(on)}$
- Build-in RC snubber
- Low Q_{GD}
- Reduce C_{GD}/C_{GS} ratio

AUTOMOTIVE AND INDUSTRIAL LV POWER MOSFETS

Released

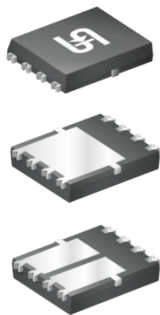
NB Series Trench

TSC P/N	BV _{DSS} [V]	R _{DS(on)} .MAX @10Vgs [mΩ]	R _{DS(on)} .MAX @7Vgs [mΩ]	Q _G typ. @10V [nC]	V _{GSTH} [V]	Tj max. [°C]	Package
TxM025NB04CR	40	2.5	3.5	118	2.5	175	PDFN56U
TxM033NB04CR	40	3.3	5.1	87	2.5	175	PDFN56U
TxM070NB04CR	40	7	9.3	42	2.6	175	PDFN56U
TxM110NB04CR	40	11	17.2	25	2.4	175	PDFN56U
TxM150NB04CR	40	15	21	20	2.5	175	PDFN56U
TxM050NB06CR	60	5	7	114	2.6	175	PDFN56U
TxM130NB06CR	60	13	18.5	40	2.6	175	PDFN56U
TxM250NB06CR	60	25	31.6	24	2.6	175	PDFN56U
TxM300NB06CR	60	30	42.3	20	2.6	175	PDFN56U
TxM110NB04DCR	40	11	17.2	26	2.5	175	PDFN56UD
TxM150NB04DCR	40	15	28.6	18	2.8	175	PDFN56UD
TxM250NB06DCR	60	25	31.6	24	2.6	175	PDFN56UD
TxM300NB06DCR	60	30	42.3	20	2.6	175	PDFN56UD

NH Series Perfect

TSC P/N	BV _{DSS} [V]	R _{DS(on)} .MAX @10Vgs [mΩ]	ID @25°C [A]	Q _G typ. @10V [nC]	V _{GSTH} [V]	Tj max. [°C]	Package
TxM019NH04LCR	40	1.9	100	104	1.4 - 2.2	175	PDFN56U
TxM019NH04CR	40	1.9	100	89	2.4 - 3.6	175	PDFN56U
TxM025NH04LCR	40	2.5	100	63	1.4 - 2.2	175	PDFN56U
TxM025NH04CR	40	2.5	100	59	2.4 - 3.6	175	PDFN56U
TxM032NH04LCR	40	3.2	81	50	1.4 - 2.2	175	PDFN56U
TxM032NH04CR	40	3.2	81	45	2.4 - 3.6	175	PDFN56U
TxM043NH04LCR	40	4.3	54	42	1.4 - 2.2	175	PDFN56U
TxM043NH04CR	40	4.3	54	32	2.4 - 3.6	175	PDFN56U
TxM056NH04LCR	40	5.6	54	30	1.4 - 2.2	175	PDFN56U
TxM056NH04CR	40	5.6	54	27	2.4 - 3.6	175	PDFN56U
TxM070NH04LCR	40	7.0	54	23	1.4 - 2.2	175	PDFN56U
TxM070NH04CR	40	7.0	54	19	2.4 - 3.6	175	PDFN56U
TxM076NH04LDCR	40	7.6	40	23	1.4 - 2.2	175	PDFN56UD
TxM076NH04DCR	40	7.6	40	19	2.4 - 3.6	175	PDFN56UD

PDFN56u/D

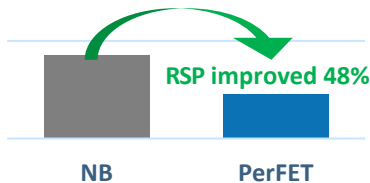


TxM: TSM – Standard grade ; TQM – Automotive grade.

P/N	Voltage	Rdson@10Vgs	ID	VGS	Tj.max	Package
TxM020NH06CR / LCR	60V	2.0mΩ	120A	±20V	175°C	PDFN56u
TxM024NH06CR / LCR	60V	2.4mΩ	120A	±20V	175°C	PDFN56u
TxM028NH06CR / LCR	60V	2.8mΩ	100A	±20V	175°C	PDFN56u
TxM041NH06CR / LCR	60V	4.1mΩ	100A	±20V	175°C	PDFN56u
TxM053NH06CR / LCR	60V	5.3mΩ	81A	±20V	175°C	PDFN56u
TxM088NH06CR / LCR	60V	8.8mΩ	54A	±20V	175°C	PDFN56u
TxM130NH06CR / LCR	60V	13mΩ	54A	±20V	175°C	PDFN56u
TxM140NH06DCR / LDCR	60V	14mΩ	40A	±20V	175°C	PDFN56uD

Features

- AEC-Q101 Qualified
- Very low On-resistance reduce conduction loss
- less Rdson variation at -50°C to 175°C
- Excellent FOM ($R_{dson} * Q_g$)



Application

- 12V - 24V Automotive applications
- Switching power supply
- Server power supply
- Motor drive applications

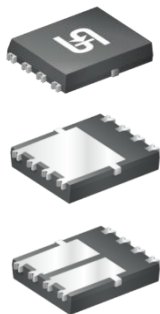
Target Schedule

- ❖ Preliminary datasheet: All available now
- ❖ Engineering sample: Apr, 2024
- ❖ Release: **2.8mΩ ~ 14mΩ parts are Jun, 2024**
2.0mΩ & 2.4mΩ parts are Aug, 2024

PerFET™ 100V POWER MOSFETS

In Development

PDFN56u/D

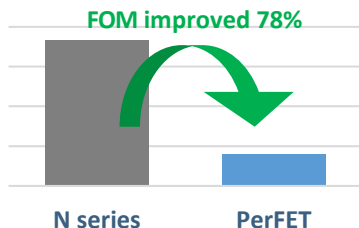


TxM: TSM – Standard grade ; TQM – Automotive grade.

P/N	Voltage	Rdson@10Vgs	ID	VGS	Tj.max	Package
TxM036NH10CR / LCR	100V	3.6mΩ	120A	±20V	175°C	PDFN56u
TxM040NH10CR / LCR	100V	4.0mΩ	120A	±20V	175°C	PDFN56u
TxM045NH10CR / LCR	100V	4.5mΩ	100A	±20V	175°C	PDFN56u
TxM075NH10CR / LCR	100V	7.5mΩ	100A	±20V	175°C	PDFN56u
TxM100NH10CR / LCR	100V	10mΩ	70A	±20V	175°C	PDFN56u
TxM170NH10CR / LCR	100V	17mΩ	50A	±20V	175°C	PDFN56u
TxM240NH10CR / LCR	100V	24mΩ	34A	±20V	175°C	PDFN56u
TxM250NH10DCR / LDCR	100V	25mΩ	34A	±20V	175°C	PDFN56uD

Features

- AEC-Q101 Qualified
- Very low On-resistance reduce conduction loss
- Extra low Qg for easy drive
- less Rdson variation at -50°C to 175°C
- Excellent FOM ($R_{dson} * Q_g$)



Application

- 48V Automotive applications
- Switching power and Telecom power supply
- Motor driver
- BMS and Polarity switches

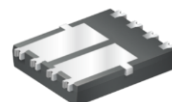
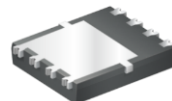
Target Schedule

- ❖ Preliminary datasheet: All available now
- ❖ Engineering sample: 4.5mΩ ~ 25mΩ parts - Jun/E, 2024
3.6mΩ & 4.0mΩ parts – Sep/E, 2024
- ❖ Release: **4.5mΩ ~ 24mΩ parts – Sep/E, 2024**
3.6mΩ & 4.0mΩ parts – Nov/E, 2024

40V - 60V P-CH POWER MOSFETS

In development

PDFN56U/D



TQM – Automotive grade.

P/N	Voltage	Rdson@10Vgs	ID	VGS	Tj.max	Package
TQM072PB04LCR	-40V	7.2mΩ	100A	±20V	175°C	PDFN56U
TQM160PB04LCR	-40V	16mΩ	48A	±20V	175°C	PDFN56U
TQM240PB04LCR	-40V	24mΩ	34A	±20V	175°C	PDFN56U
TQM320PB04LCR	-40V	32mΩ	29A	±20V	175°C	PDFN56U
TQM140PB06LCR	-60V	14mΩ	73A	±20V	175°C	PDFN56U
TQM300PB06LCR	-60V	30mΩ	35A	±20V	175°C	PDFN56U
TQM420PB06LCR	-60V	42mΩ	26A	±20V	175°C	PDFN56U
TQM540PB06LCR	-60V	54mΩ	22A	±20V	175°C	PDFN56U
TQM500PB06LDCR	-60V	50mΩ	20A	±20V	175°C	PDFN56U Dual
TQM600PB06LDCR	-60V	60mΩ	18A	±20V	175°C	PDFN56U Dual

Features

- Advanced trench technology
- AEC-Q101 qualified
- Logic level
- Wettable flanks leads for enhanced AOI
- 175°C Junction temperature (Tj)

Application

- 12V - 24V Automotive applications
- High-side load switch

Target Schedule

- ❖ Preliminary datasheet: Oct' 2024
- ❖ Engineering sample: Jan' 2025
- ❖ Release: Mar' 2025



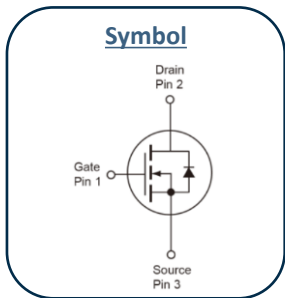
TAIWAN
SEMICONDUCTOR

250V / 60mΩ Power MOSFET - TSM600NA25CIT - Planar

ITO-220TL



Symbol



P/N	TSM600NA25CIT C0G	
Parameter	Value	Unit
VDS	250	V
RDS(on) (max)	60	mΩ
Qg	71	nC
Crss	22	pF

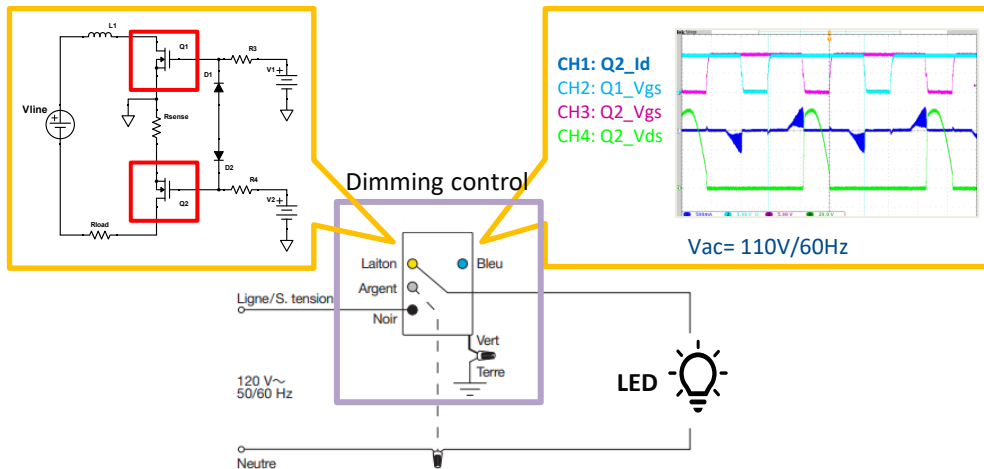
Features

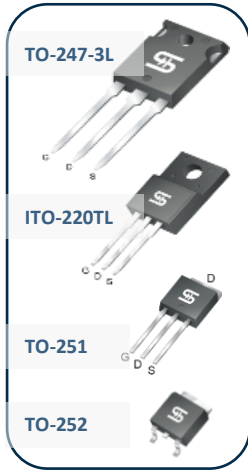
- Low RDS(ON) 56mΩ (Typical)
- Low gate charge typical @ 71nC (Typical)
- UL recognized file # E-326243
- Isolation voltage 2500V / 1min
- 100% Avalanche tested

Applications

- Industrial applications
- Dimmer power
- Lighting power

Reference Circuitry

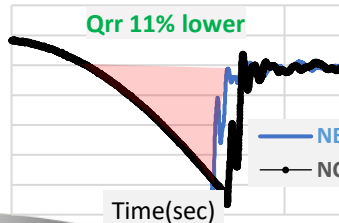




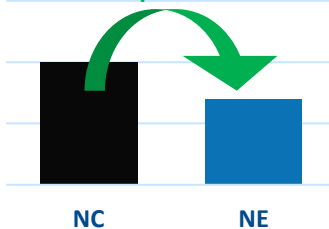
TSC P/N	BV _{DSS}	Rdson@10Vgs	ID	V _{GS(TH)} TYP	Tj.max	Package
TSM60NE069CIT C0G	600V	69mΩ	26A	4V ~ 6V	150°C	ITO-220TL
TSM60NE084CIT C0G	600V	84mΩ	22A	4V ~ 6V	150°C	ITO-220TL
TSM60NE110CIT C0G	600V	110mΩ	19A	4V ~ 6V	150°C	ITO-220TL
TSM60NE145CIT C0G	600V	145mΩ	14A	4V ~ 6V	150°C	ITO-220TL
TSM60NE180CIT C0G	600V	180mΩ	13A	4V ~ 6V	150°C	ITO-220TL
TSM60NE200CIT C0G	600V	200mΩ	12A	4V ~ 6V	150°C	ITO-220TL
TSM60NE285CIT C0G	600V	285mΩ	7.1A	4V ~ 6V	150°C	ITO-220TL
TSM60NE048PW C0G	600V	48mΩ	64A	4V ~ 6V	150°C	TO-247-3L
TSM60NE069PW C0G	600V	69mΩ	46A	4V ~ 6V	150°C	TO-247-3L
TSM60NE084PW C0G	600V	84mΩ	41A	4V ~ 6V	150°C	TO-247-3L
TSM60NE285CH C5G	600V	285mΩ	11A	4V ~ 6V	150°C	TO-251
TSM60NE285CP C0G	600V	285mΩ	11A	4V ~ 6V	150°C	TO-252

Features

- 4th generation super junction technology.
- Better FOM and Lower Qrr.
- High gate noise immunity.



FOM improved 30%



Application

- SMPS and server power supply.
- Lighting.
- HV motor driver.

Target Schedule

- ❖ Preliminary datasheet: All available now.
- ❖ Engineering sample: Available now.
- ❖ Released: Mar-27th 2024

AUTOMOTIVE PDFN33 MOSFETS (NB SERIES) Released (Not-Wettable)



Part Number	BV_{DS}	$R_{DS(ON),max}$	ID	$Q_G(Typ)$	V_{GS}	$V_{GS(TH)}$	T_j,max
TQM100NB04CV RGG	40V	10m Ω	46A	25nC	$\pm 20V$	1.8V – 3.8V	150°C
TQM130NB04CV RGG	40V	13m Ω	39A	20nC	$\pm 20V$	1.8V – 3.8V	150°C
TQM250NB06CV RGG	60V	25m Ω	29A	25nC	$\pm 20V$	1.8V – 3.8V	150°C
TQM300NB06CV RGG	60V	30m Ω	25A	20nC	$\pm 20V$	1.8V – 3.8V	150°C

Features

- AEC-Q101 Qualified
- Low gate charge for fast power switching
- Miniature package size for space saving



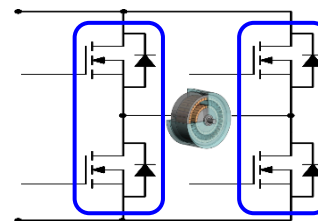
5.05mm x 6.35mm

3.3mm x 3.35mm

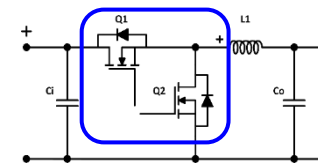
Application

- 12V and 24V automotive system
- BLDC Motor Control
- DC-DC Converter

Reference Circuitry



BLDC inverter

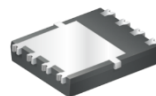


Synchronous Buck

Target Schedule

- ❖ Preliminary datasheet: All available now
- ❖ Engineering sample: All available now
- ❖ Released: Feb-28th 2024

PDFN56u



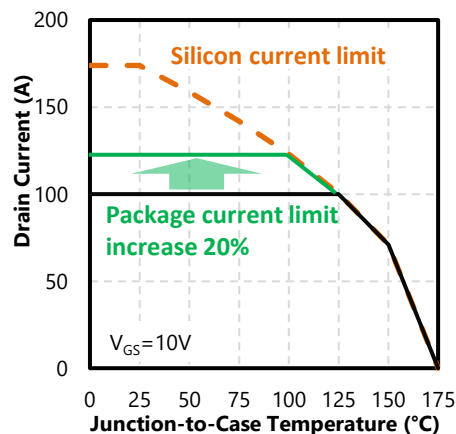
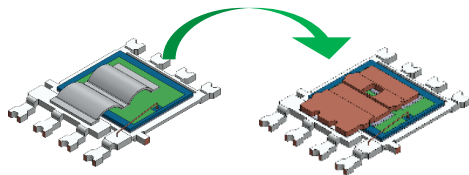
TxM: TSM – Standard grade ; TQM – Automotive grade.

P/N	Voltage	Rdson@10Vgs	ID	VGS	Tj.max	Package	Schedule
TxM011NH04CR / LCR	40V	1.1mΩ	120A	±20V	175°C	PDFN56u	Aug/E, 2024
TxM013NH04CR / LCR	40V	1.3mΩ	120A	±20V	175°C	PDFN56u	Aug/E, 2024
TxM020NH06CR / LCR	60V	2.0mΩ	120A	±20V	175°C	PDFN56u	Aug/E, 2024
TxM024NH06CR / LCR	60V	2.4mΩ	120A	±20V	175°C	PDFN56u	Aug/E, 2024
TxM038NH08CR / LCR	80V	3.8mΩ	120A	±20V	175°C	PDFN56u	Mar/E, 2025
TxM036NH10CR / LCR	100V	3.6mΩ	120A	±20V	175°C	PDFN56u	Nov/E, 2024
TxM040NH10CR / LCR	100V	4.0mΩ	120A	±20V	175°C	PDFN56u	Nov/E, 2024

Features

- AEC-Q101 Qualified.
- Ultra low package resistance.
- Good thermal conducting.
- Better current capability and SOA.

Bonding resistance reduces 50%



Application

- High performance switching power supply.
- Power tool.
- Polarity switches

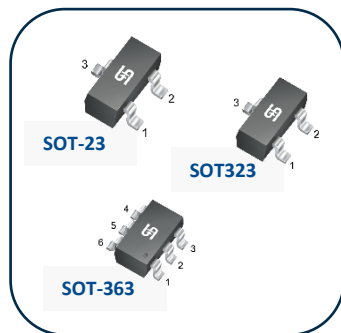
Target Schedule

- ❖ Preliminary datasheet: Mar/E, 2024.
- ❖ Engineering sample:
 - ❖ 40V & 60V parts - Jun/E, 2024.
 - ❖ 80V & 100V parts – Sep/M, 2024

AUTOMOTIVE SMALL-SIGNAL MOSFET

Released

TSC P/N	Package	Ch	Config	V_{DSS}	$R_{DS(ON).typ}$ @10V	$R_{DS(ON).typ}$ @4.5V	V_{GS}	V_{GSth}	I_D	Cross P/N
TQM2N7002KCX	SOT-23	N	Single	60V	1.2 Ω	1.5 Ω	$\pm 20V$	0.8V~2.5V	370mA	2N7002BK, 2N7002K, 2N7002KQ, 2N7002, RCU002N05HZG
TQM2N7002KCU	SOT-323	N	Single	60V	1.2 Ω	1.5 Ω	$\pm 20V$	0.8V~2.5V	320mA	2N7002BKW, 2N7002W
TQM2N7002KDCU6	SOT-363	N	Dual	60V	1.2 Ω	1.5 Ω	$\pm 20V$	0.8V~2.5V	330mA	2N7002BKS, 2N7002DW, 2N7002DWQ
TQM138KCX	SOT-23	N	Single	60V	1.2 Ω	1.3 Ω	$\pm 20V$	0.5V~1.5V	360mA	BSS138BK, BVSS138L, BSS138Q, BSS138N, BSS138BKAHZG
TQM138KCU	SOT-323	N	Single	60V	1.2 Ω	1.3 Ω	$\pm 20V$	0.5V~1.5V	310mA	BSS138BKW, BSS138WQ, BSS138W, BSS138BWAHZG
TQM138KDCU6	SOT-363	N	Dual	60V	1.2 Ω	1.3 Ω	$\pm 20V$	0.5V~1.5V	320mA	BSS138BKS, BSS138DWQ
TQM123KCX	SOT-23	N	Single	100V	3.5 Ω	4.3 Ω	$\pm 20V$	1.5V~2.5V	170mA	BSS123, BSS123LT, BSS123Q, BSS123N
TQM84KCX	SOT-23	P	Single	-60V	1.9 Ω	2.3 Ω	$\pm 20V$	-0.8V~-2.5V	-190mA	BSS84AK, BSS84, BSS84Q, BSS84P, BSS84AHZG
TQM84KCU	SOT-323	P	Single	-60V	1.9 Ω	2.3 Ω	$\pm 20V$	-0.8V~-2.5V	-160mA	BSS84AKW, BSS84WQ, BSS84PW, BSS84WAHZG
TQM84KDCU6	SOT-363	P	Dual	-60V	1.9 Ω	2.3 Ω	$\pm 20V$	-0.8V~-2.5V	-170mA	BSS84AKS, BSS84DWQ



Features

- AEC-Q101 qualified
- Manufactured in IATF 16949 certified facilities.
- Advanced trench cell design
- ESD protected (HBM >2kV)
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant and Halogen-free

Application

- General automotive applications
- Switching circuits
- High-speed line driver

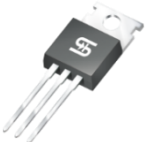
Target Schedule

- ❖ Preliminary datasheet: All available now.
- ❖ Engineering sample: Available now.
- ❖ Released: Mar-27th 2024.



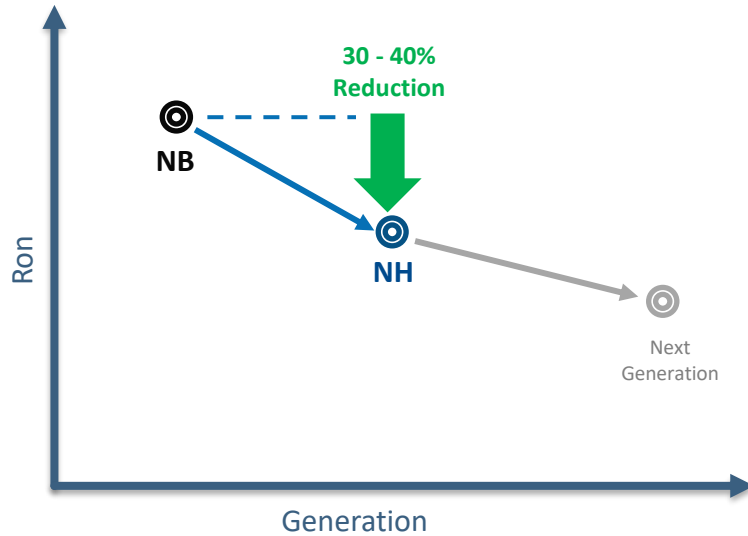
TAIWAN SEMICONDUCTOR

MOSFET AVAILABLE PACKAGE LINEUP

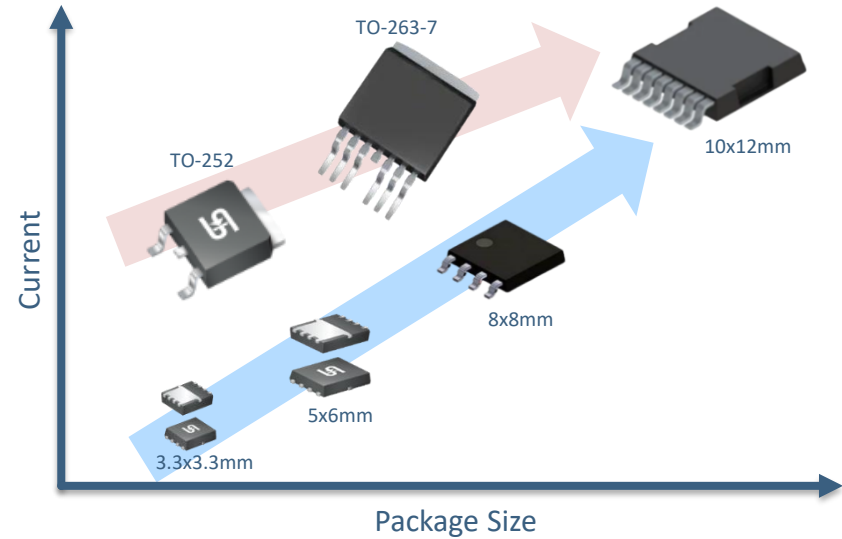
						
TDFN-2X2-6L (CQ)	PDFN33 (CV)	PDFN33Dual (DCV)	PDFN56 (CR)	PDFN56Dual (DCR)	PDFN56U (CR)	PDFN56UDual (DCR)
						
SOIC8 (CS)	TSSOP8 (DCA)	TO-252 (CP)	TO-263 (CM2)	TO-251S (CH)	TO-251 (CH)	ITO-220 (CI)
						
TO-220 (CZ)	TO-247 (PW)	SOT-323 (CU)	SOT-363 (DCU)	SOT-23 (CX)	SOT-26 (CX6)	SOT-223 (CW)

TSC AUTOMOTIVE MOSFETS FUTURE PLAN

Technology Trend



Package Trend



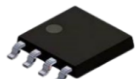
GAN Transistors

GAN TRANSISTORS

PDFN56/88



5x6mm



8x8mm

P/N	Vds	Rdson max	ID	VGS	Tj.max	Package
TSG65N068CE	650V	68mΩ	30A	-10V/+7V	150°C	PDFN88
TSG65N110CE	650V	110mΩ	18A	-10V/+7V	150°C	PDFN88
TSG65N195CE	650V	195mΩ	11A	-10V/+7V	150°C	PDFN88
TSG65N190CR	650V	190mΩ	11A	-10V/+7V	150°C	PDFN56

Features

- True Enhancement mode
- Best FOM and performance
- No reverse recovery loss
- Easy to parallel

Application

- Low voltage, high frequency, inverter
- DC/DC converter
- Freewheeling diodes
- Reverse battery protection
- Car lighting



TSC, Your Reliable Partner

CONTACT:

CAMEL GECO ELETTRONICA SRL

v. Bergamo, 16 – 20020 – Lainate (MI)

E-mail: info@camelgeco.it

Web-site: www.camelgeco.it

Tel. +39 02 93570527