

Introduction of TOSHIBA MOSFET for automotive and industrial use

TOSHIBA CORPORATION MOSFET offers a wide range of configurations and package lineups, from low-voltage components to medium-and high-voltage components that support automotive and industrial equipment, with features such as high-speed, high-performance, low-loss, low-on-resistance, and compact packages. Currently, we are expanding our lineup of pressure-resistant 650V, 1200V from the third-generation SiC MOSFET, pressure-resistant 400V to 900V Si medium-to high-pressure-resistant product "DTMOS" series, and 12V to 300V Si low-pressure-resistant product "U-MOS" series.

Introduction of Automotive MOSFETs

We offer an extensive lineup that covers a variety of applications for 12V to 48V system for automotive applications. We have developed a state-of-the-art wafer process. This process reduces switching noise, which is a problem in automotive equipment. In addition, we combine low-resistance packaging technology to achieve low-noise and low-on-resistance products. These technologies will help reduce the energy loss and size of in-vehicle devices.

Features of Automotive MOSFETs

- ✓ Providing a lineup suitable for a variety of in-vehicle applications for 12V to 48V system.
- ✓ New packaging S-TOGL™ with low RON and compact size.
- ✓ Excellent heat dissipation and reduced conduction loss due to low on-resistance contribute to miniaturization of the set.

[Click Here](#)
List of in-vehicle MOSFET

Introduction to industrial Si MOSFETs

We offer a lineup of 12V-300V Si low-voltage MOSFET suitable for industrial use and 400V-900V Si medium-and high-voltage MOSFET. We offer products that are ideal for industrial equipment that require high efficiency with low noise and low switching loss.

Features of Industrial MOSFETs

- ✓ Packages and product variations for ultra-small size to large current.
- ✓ Highly efficient power supply with superior Ron*Qgd

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List of industrial Si MOSFETs

Introduction of 3G SiC MOSFETs for industrial use

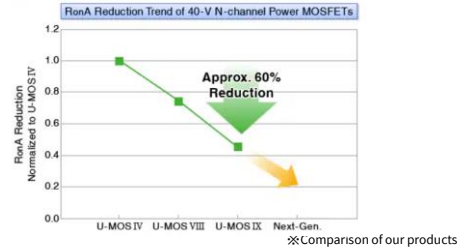
The third-generation SiC MOSFET offers a lineup of 650 V and 1200 V withstand voltage products. These products are used in applications such as servers, uninterruptible power supplies (UPS), and solar inverters, contributing to lower-loss equipment.

Features of 3G SiC MOSFET

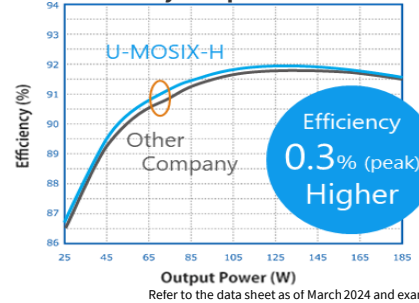
- ✓ Built-in Schottky Barrier Diode (SBD) for low-back-continuity V_{DSF} to reduce on-resistance $R_{DS(ON)}$ variations.
- ✓ Performance index $R_{DS(ON)} \times Q_{gd}$, which shows the relation between the continuity loss and the switching loss, contributes to the reduction of the loss of the equipment.
- ✓ Wide Gate-to-Source Voltage V_{GSS} .

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List of industrial SiC MOSFET

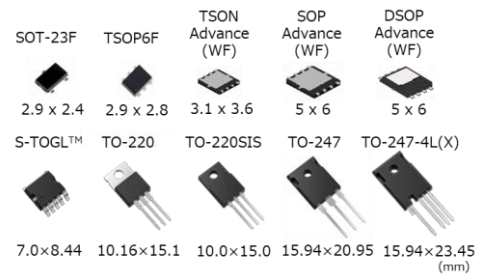
Ron performance



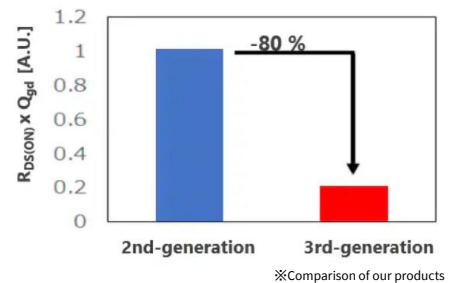
Efficiency comparison



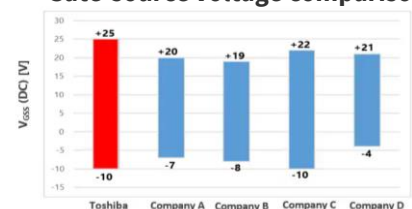
Extensive package lineup



$R_{DS(ON)} \times Q_{gd}$ performance



Gate-source voltage comparison



Automotive MOSFET Selection Table

[N-Channel LV-MOSFETs] (Automotive)

Part number	Package	VDSS (V)	VGSS (V)	ID (A)	RON max (mΩ)				Ciss (pF) Typ	Qgs (nC) Typ	Qgd (nC) Typ	Qoss (nC) Typ	Qrr (nC) Typ	Purchase
					1.8V	4.5V	6.0V	10V						
XPQR3004PB	L-TOGL™,9.9×11.81	40	±20	400	-	-	0.47	0.3	20700	1500	295	80	-	Buy Online
XPQ1R004PB	L-TOGL™,9.9×11.81	40	±20	200	-	-	1.8	1.0	5300	400	84	19	-	Buy Online
XPJR6604PB	S-TOGL™,7.0×8.44	40	±20	200	-	-	1.16	0.66	8750	780	128	29	-	Buy Online
XPJ1R004PB	S-TOGL™,7.0×8.44	40	±20	160	-	-	1.8	1.0	5300	400	84	19	-	Buy Online
XPHR7904PS	SOP Advance(WF),5×6	40	±20	150	-	-	1.3	0.79	6650	490	85	14	-	Buy Online
XPHR9904PS	SOP Advance(WF),5×6	40	±20	130	-	-	1.63	0.99	5520	460	83	25	-	Buy Online
XPH1R104PS	SOP Advance(WF),5×6	40	±20	120	-	-	1.96	1.14	4560	320	55	13	-	Buy Online
XPH2R404PS	SOP Advance(WF),5×6	40	±20	90	-	-	4.1	2.4	2500	190	40	7	-	Buy Online
XPH3R304PS	SOP Advance(WF),5×6	40	±20	60	-	-	6.3	3.3	1660	145	30	6	-	Buy Online
XPQR8308QB	L-TOGL™,9.9×11.81	80	±20	350	-	-	1.23	0.83	19000	1000	305	70	-	Buy Online
XPH4R10ANB	SOP Advance(WF),5×6	80	±20	70	-	-	6.2	4.1	4970	300	75	16	-	Buy Online
XPH6R30ANB	SOP Advance(WF),5×6	80	±20	45	-	-	9.5	6.3	3240	200	52	11	-	Buy Online
XPW4R10ANB	DSOP Advance(WF)L,5×6	80	±20	70	-	-	6.2	4.1	4970	300	75	16	-	Buy Online
XPW6R30ANB	DSOP Advance(WF)M,5×6	80	±20	45	-	-	9.5	6.3	3240	200	52	11	-	Buy Online
XPN1300ANC	TSON Advance(WF),3.3×3.6	80	±20	30	-	24.2	-	13.3	1470	93	28	5	-	Buy Online
XPQ1R00AQB	L-TOGL™,9.9×11.81	100	±20	300	-	-	1.93	1.03	16500	1000	269	73	-	Buy Online

[P-Channel LV-MOSFETs] (Automotive)

Part number	Package	VDSS (V)	VGSS (V)	ID (A)	RON max (mΩ)				Ciss (pF) Typ	Qgs (nC) Typ	Qgd (nC) Typ	Qoss (nC) Typ	Qrr (nC) Typ	Purchase
					1.8V	4.5V	6.0V	10V						
XPH3R114MC	SOP Advance(WF),5×6	-40	+10/-20V	-100	-	4.7	-	3.1	9500	1110	230	58	-	Buy Online
XPH4R714MC	SOP Advance(WF),5×6	-40	+10/-20V	-60	-	6.9	-	4.7	5640	685	140	36	-	Buy Online
XPN9R614MC	TSON Advance(WF),3.3×3.6	-40	+10/-20V	-40	-	13.4	-	9.6	3000	335	64	17	-	Buy Online
XPN19014MC	TSON Advance(WF),3.3×3.6	-40	+10/-20V	-20	-	29.2	-	18.7	1600	200	51	16	-	Buy Online
XPH8R316MC	SOP Advance(WF),5×6	-60	+10/-20V	-90	-	10.2	-	8.3	10500	740	222	47	-	Buy Online
XPH13016MC	SOP Advance(WF),5×6	-60	+10/-20V	-60	-	16.6	-	12.9	6820	460	148	39	-	Buy Online

[N-Channel LV-MOSFETs (Small Signal)] (Automotive)

Part number	Package	VDSS (V)	VGSS (V)	ID (A)	RON max (mΩ)				Ciss (pF) Typ	Qgs (nC) Typ	Qgd (nC) Typ	Qoss (nC) Typ	Qrr (nC) Typ	Purchase
					1.8V	2.5V	4.5V	10V						
SSM3K62TU	UFM,2.0×2.1	20	±8	0.8	89	69	57	-	177	1.3	0.6	-	-	Buy Online
SSM6N62TU	UF6,2.0×2.1	20	±8	0.8	120	98	85	-	177	1.3	0.6	-	-	Buy Online
SSM3K376R	SOT-23F,2.9×2.4	30	+12/-8	4	109	72	56	-	200	0.5	0.9	-	-	Buy Online
SSM3K341TU	UFM,2.0×2.1	60	±20	6	-	-	51	36	550	1.8	2	-	-	Buy Online
SSM3K341R	SOT-23F,2.9×2.4	60	±20	6	-	-	51	36	550	1.8	2	-	-	Buy Online
SSM6K809R	TSOP6F,2.9×2.8	60	±20	6	-	-	51	36	550	1.8	9.3	-	-	Buy Online
SSM3K72KFS	SSM,1.6×1.6	60	±20	0.3	-	-	1750	1500	26	0.2	0.11	-	-	Buy Online
SSM3K7002KFU	USM,2.0×2.1	60	±20	0.4	-	-	1750	1500	26	0.2	0.11	-	-	Buy Online
SSM3K7002KF	S-Mini,2.9×2.5	60	±20	0.4	-	-	1750	1500	26	0.2	0.11	-	-	Buy Online
SSM6N7002KFU	UF6,2.0×2.1	60	±20	0.3	-	-	1750	1500	26	0.2	0.11	-	-	Buy Online
SSM3K361TU	UFM,2.0×2.1	100	±20	3.5	-	-	92	69	430	1.1	1.5	-	-	Buy Online
SSM3K361R	SOT-23F,2.9×2.4	100	±20	3.5	-	-	92	69	430	1.1	1.5	-	-	Buy Online
SSM6K810R	TSOP6F,2.9×2.8	100	±20	3.5	-	-	92	69	430	1.1	1.5	-	-	Buy Online
SSM6K819R	TSOP6F,2.9×2.8	100	±20	10	-	-	36.4	25.8	1110	4.3	3	-	-	Buy Online
SSM6N813R	TSOP6F,2.9×2.8	100	±20	3.5	-	-	154	112	242	1.8	0.9	-	-	Buy Online
SSM6L820R	TSOP6F,2.9×2.8	30	+12/-8	4	82	53	39.1	-	310	0.5	0.7	-	-	Buy Online
		-20	-12/+6	-4	157	76	56	45	480	0.95	1.5	-	-	Buy Online

[P-Channel LV-MOSFETs (Small Signal)] (Automotive)

Part number	Package	VDSS (V)	VGSS (V)	ID (A)	RON max (mΩ)				Ciss (pF) Typ	Qgs (nC) Typ	Qgd (nC) Typ	Qoss (nC) Typ	Qrr (nC) Typ	Purchase
					1.8V	2.5V	4.5V	10V						
SSM3J66MFV	VE SM,1.2×1.2	-20	-8/6	-0.8	660	480	390	-	100	0.2	0.4	-	-	Buy Online
SSM3J145TU	UFM,2.0×2.1	-20	-8/6	-3	180	132	103	-	270	0.4	0.9	-	-	Buy Online
SSM3J144TU	UFM,2.0×2.1	-20	-8/6	-3.2	168	123	93	-	290	0.4	1	-	-	Buy Online
SSM3J140TU	UFM,2.0×2.1	-20	-8/6	-4.4	41.1	31	25.8	-	1800	1	6.8	-	-	Buy Online
SSM3J143TU	UFM,2.0×2.1	-20	-8/6	-5.5	56	39.7	29.8	-	840	1.4	3	-	-	Buy Online
SSM6J422TU	UF6,2.0×2.1	-20	-8/6	-4	67.8	51.4	42.7	-	840	1.4	3	-	-	Buy Online
SSM3J377R	SOT-23F,2.9×2.4	-20	-8/6	-3.9	168	123	93	-	290	3.4	1.2	-	-	Buy Online
SSM3J371R	SOT-23F,2.9×2.4	-20	-8/6	-4	100	75	55	-	630	0.7	3.0	-	-	Buy Online
SSM3J378R	SOT-23F,2.9×2.4	-20	-8/6	-6	56	39.7	29.8	-	840	1.4	3	-	-	Buy Online
SSM3J374R	SOT-23F,2.9×2.4	-30	-20/+10	-4	-	-	105	71	280	0.8	1.2	-	-	Buy Online
SSM3J372R	SOT-23F,2.9×2.4	-30	-12/+6	-6	144	72	50	42	560	1.1	2.2	-	-	Buy Online
SSM3J351R	SOT-23F,2.9×2.4	-60	-20/+10	-3.5	-	-	164	134	660	0.6	3	-	-	Buy Online
SSM3J356R	SOT-23F,2.9×2.4	-60	-20/+10	-2	-	-	360	300	330	0.8	1.7	-	-	Buy Online
SSM3J375F	S-Mini,2.9×2.5	-20	-8/6	-4	231	179	150	-	270	0.4	0.9	-	-	Buy Online
SSM3J168F	S-Mini,2.9×2.5	-60	-20/+10	-0.4	-	-	1900	2000	82	0.4	1.1	-	-	Buy Online
SSM6J808R	TSOP6F,2.9×2.8	-40	-20/+10	-7.0	-	-	48	35	1020	3	5.3	-	-	Buy Online

Industrial Si MOSFET selection table

[N-Channel LV-MOSFETs] (Industrial)

Part number	Package	VDSS (V)	VGSS (V)	ID (A)	RON max (mΩ)				Ciss (pF) Typ	Qgs (nC) Typ	Qgd (nC) Typ	Qoss (nC) Typ	Qrr (nC) Typ	Purchase
					1.8V	2.5V	4.5V	10V						
TPH9R00CQ5	SOP Advance(N), 5x6	150	±20	64	-	-	11 (8V)	9	3500	18	6.6	87	34	Buy Online
TPH2R408QM	SOP Advance(N), 5x6	80	±20	120	-	-	3.5 (6V)	2.43	5870	23	19	90	74	Buy Online
TPH1R306PL1	SOP Advance(N), 5x6	60	±20	100	-	-	2.3	1.34	6250	17.3	14.4	77.5	48	Buy Online
TPHR8504PL1	SOP Advance(N), 5x6	40	±20	150	-	-	1.4	0.85	7370	25	12.4	85.4	70	Buy Online
TPH1R204PL1	SOP Advance(N), 5x6	40	±20	150	-	-	2.1	1.24	5500	16	17	56	46	Buy Online

[N-Channel HV-MOSFETs] (Industrial)

Part number	Package	VDSS (V)	VGSS (V)	ID (A)	RON max (mΩ)				Ciss (pF) Typ	Qgs (nC) Typ	Qgd (nC) Typ	Qoss (nC) Typ	Qrr (nC) Typ	Purchase
					1.8V	2.5V	4.5V	10V						
TK040N65Z	TO-247,15.94×20.95	650	±30	57	-	-	-	40	6250	32	27	-	-	Buy Online
TK040Z65Z	TO-247-4L,15.94×20.95	650	±30	57	-	-	-	40	6250	32	27	-	-	Buy Online
TK065U65Z	TOLL,9.9×11.68	650	±30	38	-	-	-	65	3650	18	17	-	-	Buy Online
TK090A65Z	TO-220SIS,10.0×15.0	650	±30	30	-	-	-	90	2780	15	12	-	-	Buy Online
TK090E65Z	TO-220,10.16×15.1	650	±30	30	-	-	-	90	2780	15	12	-	-	Buy Online
TK099V65Z	DFN8x8,8.0×8.0	650	±30	30	-	-	-	99	2780	15	12	-	-	Buy Online
TK055U60Z1	TOLL,9.9×11.68	650	±30	40	-	-	-	55	3680	20	15	-	-	Buy Online
TK042N65Z5	TO-247,15.94×20.95	650	±30	55	-	-	-	42	6280	40	35	-	-	Buy Online
TK095N65Z5	TO-247,15.94×20.95	650	±30	29	-	-	-	95	2880	15	17	-	-	Buy Online

[N-Channel LV-MOSFETs (Small Signal)] (Industry)

Part number	Package	VDSS (V)	VGSS (V)	ID (A)	RON max (mΩ)				Ciss (pF) Typ	Qgs (nC) Typ	Qgd (nC) Typ	Qoss (nC) Typ	Qrr (nC) Typ	Purchase
					1.8V	2.5V	4.5V	10V						
SSM6K818R	TSOP6F,2.9×2.8	30	±20	10	-	-	36.4	25.8	1100	4.3	3.0	-	-	Buy Online
SSM3K15AFU	USM,2.0×2.1	30	±20	0.1	-	6000	-	-	13.5	-	-	-	-	Buy Online
SSM3K376R	SOT-23F,2.9×2.4	30	+12/-8	4	109	72	56	-	200	0.5	0.9	-	-	Buy Online
SSM3K318R	SOT-23F,2.9×2.4	60	±20	2.5	-	-	145	107	235	4.8	2.2	-	-	Buy Online
SSM3K2615R	SOT-23F,2.9×2.4	60	±20	2.0	-	-	-	300	150	4.6	1.4	-	-	Buy Online
SSM3K7002KFU	USM,2.0×2.1	60	±20	0.4	-	-	1650	1500	26	0.2	0.11	-	-	Buy Online
SSM3K341R	SOT-23F,2.9×2.4	60	±20	6	-	-	51	36	550	1.8	2.0	-	-	Buy Online
SSM6K810R	TSOP6F,2.9×2.8	100	±20	3.5	-	-	92	69	430	1.1	1.5	-	-	Buy Online
SSM3K361R	SOT-23F,2.9×2.4	100	±20	3.5	-	-	92	69	430	1.1	1.5	-	-	Buy Online
SSM6K819R	TSOP6F,2.9×2.8	100	±20	10.0	-	-	36.4	25.8	1110	4.3	3.0	-	-	Buy Online

[P-Channel LV-MOSFETs (Small Signal)] (Industry)

Part number	Package	VDSS (V)	VGSS (V)	ID (A)	RON max (mΩ)				Ciss (pF) Typ	Qgs (nC) Typ	Qgd (nC) Typ	Qoss (nC) Typ	Qrr (nC) Typ	Purchase
					1.8V	2.5V	4.5V	10V						
SSM3J372R	SOT-23F,2.9×2.4	-30	-12/+6	-6	144	72	50	42	560	1.1	2.2	-	-	Buy Online
SSM3J15FU	USM,2.0×2.1	-30	±20	-0.1	-	32000	-	-	9.1	-	-	-	-	Buy Online
SSM3J168F	S-Mini,2.9×2.5	-60	-20/+10	-0.4	-	-	1900	1550	82	0.4	1.1	-	-	Buy Online
SSM3J351R	SOT-23F,2.9×2.4	-60	-20/+10	-3.5	-	-	164	134	660	0.6	3	-	-	Buy Online
SSM3J356R	SOT-23F,2.9×2.4	-60	-20/+10	-2	-	-	360	300	330	0.8	1.7	-	-	Buy Online
SSM3J378R	SOT-23F,2.9×2.4	-20	-8/+6	-6	56.0	39.7	29.8	-	840	1.4	3.0	-	-	Buy Online
SSM3J371R	SOT-23F,2.9×2.4	-20	-8/+6	-4	100	75	55	-	630	0.7	3.0	-	-	Buy Online



SiC MOSFET Selection Table

Part number	Package	VDSS (V)	VGSS (V)	ID (A)	RON:VGS=18V (mΩ)				Ciss (pF) Typ	Qgs (nC) Typ	Qgd (nC) Typ	Qoss (nC) Typ	Qrr (nC) Typ	Purchase
							Typ	Max						
TW015N65C	TO-247,15.94×20.95	650	-10~25	100	-	-	15	21	4850	50	19	337	-	Buy Online
TW027N65C	TO-247,15.94×20.95	650	-10~25	58	-	-	27	37	2288	26	10	165	-	Buy Online
TW048N65C	TO-247,15.94×20.95	650	-10~25	40	-	-	48	65	1362	17	6.2	103	-	Buy Online
TW083N65C	TO-247,15.94×20.95	650	-10~25	30	-	-	83	113	873	14	3.9	72	-	Buy Online
TW107N65C	TO-247,15.94×20.95	650	-10~25	20	-	-	107	145	600	12	2.3	51	-	Buy Online
TW015Z65C	TO-247-4L(X),15.94×23.45	650	-10~25	100	-	-	15	22	4850	50	19	337	-	Buy Online
TW027Z65C	TO-247-4L(X),15.94×23.45	650	-10~25	58	-	-	27	38	2288	26	10	165	-	Buy Online
TW048Z65C	TO-247-4L(X),15.94×23.45	650	-10~25	40	-	-	48	69	1362	17	6.2	103	-	Buy Online
TW083Z65C	TO-247-4L(X),15.94×23.45	650	-10~25	30	-	-	83	118	873	14	3.9	72	-	Buy Online
TW107Z65C	TO-247-4L(X),15.94×23.45	650	-10~25	20	-	-	107	152	600	12	2.3	51	-	Buy Online
TW015N120C	TO-247,15.94×20.95	1200	-10~25	100	-	-	15	20	6000	56	23	397	-	Buy Online
TW030N120C	TO-247,15.94×20.95	1200	-10~25	60	-	-	30	40	2925	29	13	213	-	Buy Online
TW045N120C	TO-247,15.94×20.95	1200	-10~25	40	-	-	45	59	1969	21	8.9	147	-	Buy Online
TW060N120C	TO-247,15.94×20.95	1200	-10~25	36	-	-	60	78	1530	18	7.8	117	-	Buy Online
TW140N120C	TO-247,15.94×20.95	1200	-10~25	20	-	-	140	182	691	11	4.2	62	-	Buy Online
TW015Z120C	TO-247-4L(X),15.94×23.45	1200	-10~25	100	-	-	15	21	6000	56	23	397	-	Buy Online
TW030Z120C	TO-247-4L(X),15.94×23.45	1200	-10~25	60	-	-	30	41	2925	29	13	213	-	Buy Online
TW045Z120C	TO-247-4L(X),15.94×23.45	1200	-10~25	40	-	-	45	62	1969	21	8.9	147	-	Buy Online
TW060Z120C	TO-247-4L(X),15.94×23.45	1200	-10~25	36	-	-	60	82	1530	18	7.8	117	-	Buy Online
TW140Z120C	TO-247-4L(X),15.94×23.45	1200	-10~25	20	-	-	140	191	691	11	4.2	62	-	Buy Online

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