

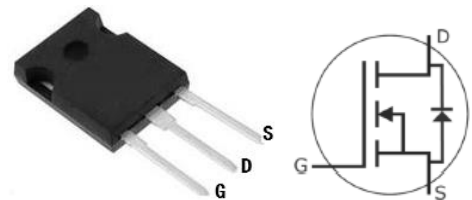
**Product Features**

- Silicon Carbide Device
- Low On-Resistance
- High Speed Switching
- Low Capacitance
- Easy to Parallel and Simple to Drive
- Higher System Efficiency and Reduced Cooling Requirements
- Increased System Power Density and Switching Frequency

**Applications**

- Renewable Energy
- EV Charging
- Server Power Supplies
- High Voltage DC/DC converters

Part Number	Package	Marking
1200V-40mΩ B2	TO-247-3L	T.B.D


**Absolute Maximum Ratings ( T<sub>c</sub>=25°C )**

Parameter	Symbol	Value	Units
Drain-Source DC Voltage	V <sub>DSS</sub>	1200	V
Gate-Source Voltage	V <sub>GS MAX</sub>	-8/+22	V
	V <sub>GS OP</sub>	-4/+18	V
Drain Current Continuous	I <sub>D</sub>	68	A
	I <sub>D</sub> *	49	A
Drain Current Pulsed	I <sub>DM</sub>	100	A
Total Power Dissipation	P <sub>D</sub> **	340	W
Operating Junction Temperature	T <sub>j</sub>	175	°C
Storage Temperature	T <sub>STG</sub>	-55~175	°C

Remake: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

\*:V<sub>GS</sub>=18V, T<sub>c</sub>=100°C ; .\*\*:T<sub>j</sub>=175°C

Electrical Characteristics,  $T_C=25^{\circ}\text{C}$  unless otherwise specified (  $T_J=25^{\circ}\text{C}$ 下 )

Parameter	Symbol	Test Conditions	Min	Max	Type	Units
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=100\mu A$	1200			V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=1200V, V_{GS}=0V$		100	1	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=22V$		250	10	nA
	$I_{SGS}$	$V_{DS}=0V, V_{GS}=-8V$		-250	-10	nA
<b>On Characteristics</b>						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=9.5mA$	1.8	4.0	2.6	V
Static Drain-Source On-state Resistance	$R_{DS(on)}$	$V_{GS}=18V, I_D=33.3A$		53	40	$m\Omega$
		$V_{GS}=18V, I_D=33.3A, T_J=175^{\circ}\text{C}$			65	$m\Omega$
<b>Dynamic Characteristics</b>						
Input Capacitance	$C_{ISS}$	$V_{GS}=0V, V_{DS}=1000V, f=1MHz$			2100	pF
Output Capacitance	$C_{OSS}$				106	pF
Reverse Transfer Capacitance	$C_{rSS}$				6	pF
<b>Switching Characteristics</b>						
Total Gate Charge	$Q_g$	$V_{GS}=-4V/18V, V_{DS}=800V, I_D=33A$			121	nC
Gate-Source Charge	$Q_{gS}$				34	nC
Gate-Drain Charge	$Q_{gd}$				20	nC
Internal Gate Resistance	$R_G$	$f=1MHz$			2.4	$\Omega$
Turn-On Delay Time	$t_{d(on)}$	$V_{DS}=800V, I_D=33A, R_{gext}=2.5\Omega, R_L=20\Omega, V_{GS}=-4V/18V$			17	ns
Turn-On Rise Time	$t_r$				58	ns
Turn-Off Delay Time	$t_{d(off)}$				26	ns
Turn-Off Fall Time	$t_f$				15	ns
Turn-On Switching Energy	$E_{ON}$	$V_{DS}=800V, I_D=33A, R_{gext}=2.5\Omega, L=100\mu H$			1410	$\mu J$
Turn-Off Switching Energy	$E_{OFF}$				750	$\mu J$
<b>Source-Drain Diode Electrical Characteristics</b>						
Continuous Forward Current		$I_S$		51		A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=-4V, I_S=10A$			4.5	V
		$V_{GS}=-4V, I_S=10A, T_J=175^{\circ}\text{C}$			4.2	
Reverse Recovery Time	$t_{rr}$	$V_R=800V, I_{SD}=20A$			38	ns
Reverse Recovery Charge	$Q_{rr}$				109	nC
Peak Reverse Recovery Current	$I_{rrm}$				5	A

Thermal Characteristics

Package	Parameter	Symbol	Type	Units
TO-247-3L	Thermal Resistance from Junction to Case	$R_{thJC}$	0.44	$^{\circ}C/W$
	Thermal Resistance from Junction to Ambient	$R_{thJA}$	40	$^{\circ}C/W$

Characteristics Curve

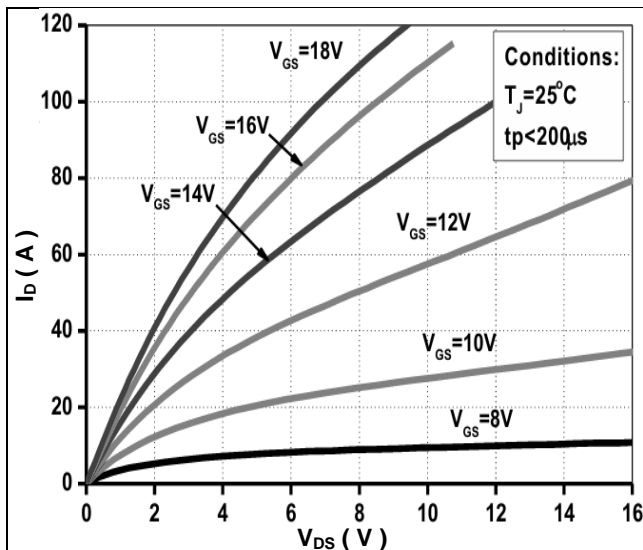


Figure 1. Output Characteristics at 25°C

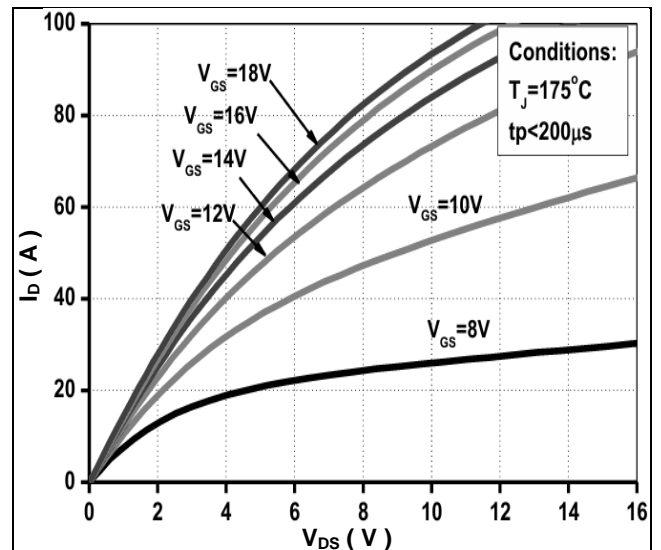


Figure 2. Output Characteristics at 175°C

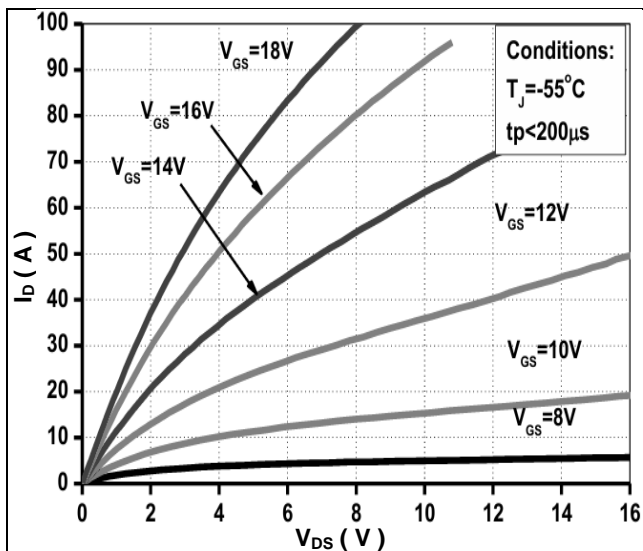


Figure 3. Output Characteristics at -55°C

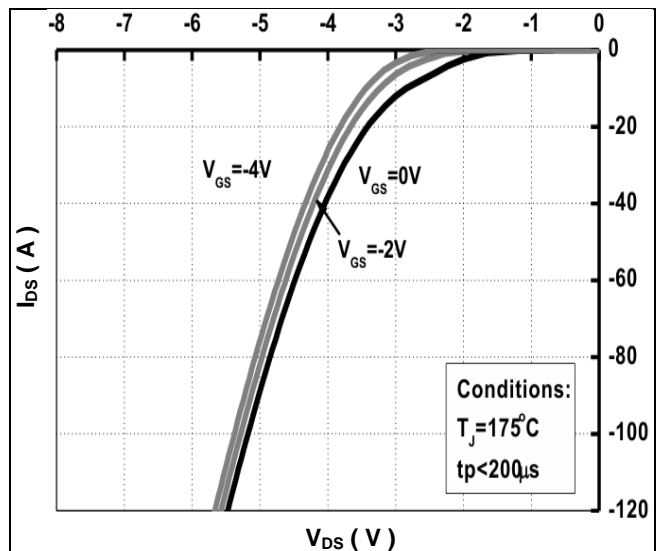


Figure 4. Body Diode Forward Characteristics at 175°C

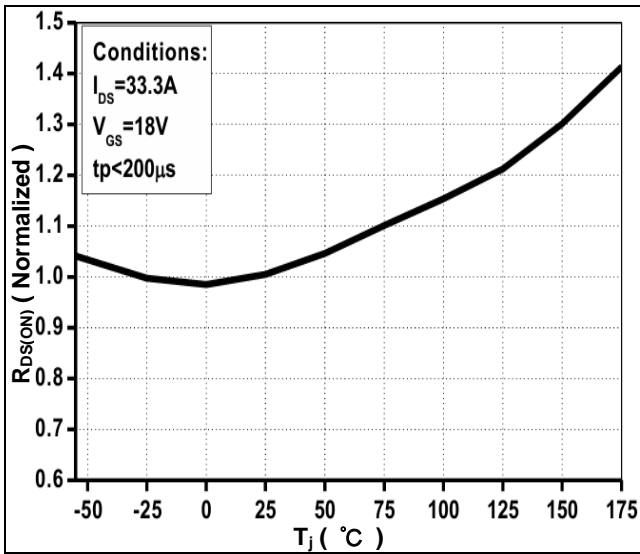


Figure 5. ON Resistance vs. Junction Temperature

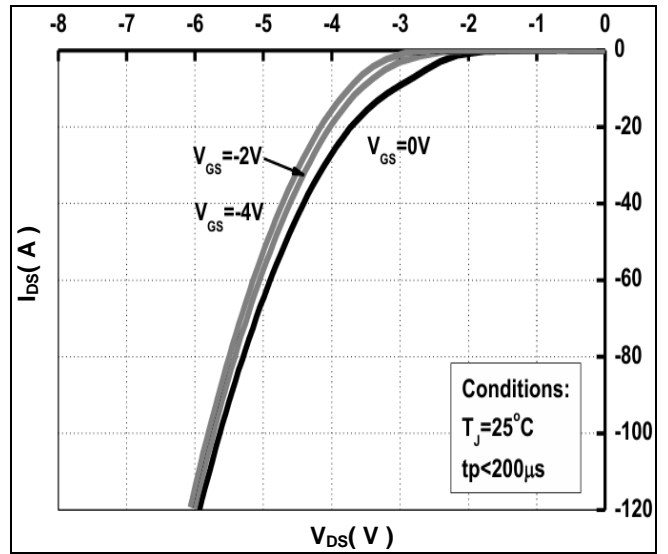


Figure 6. Body Diode Forward Characteristics

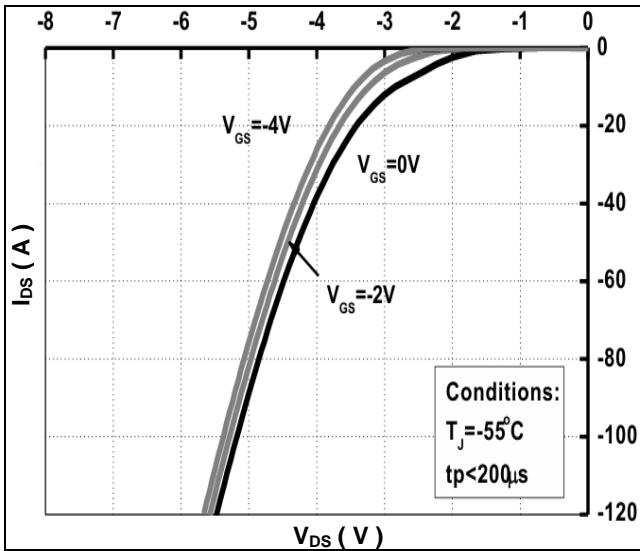


Figure 7. Body Diode Forward Characteristics at -55°C

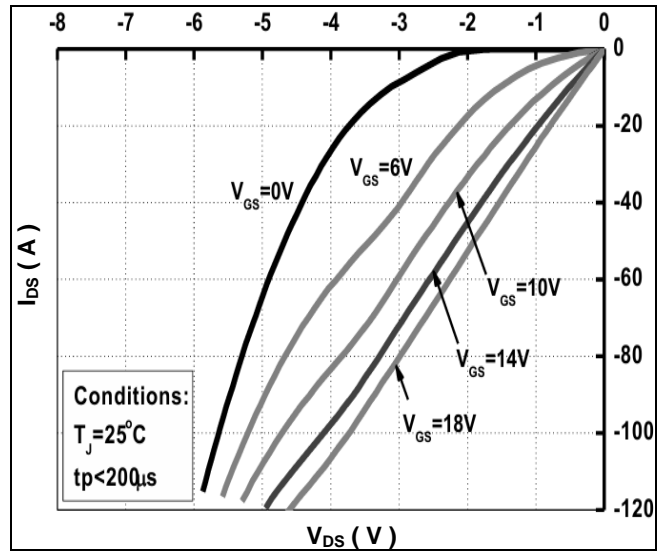


Figure 8. 3<sup>rd</sup> Quadrant Characteristic

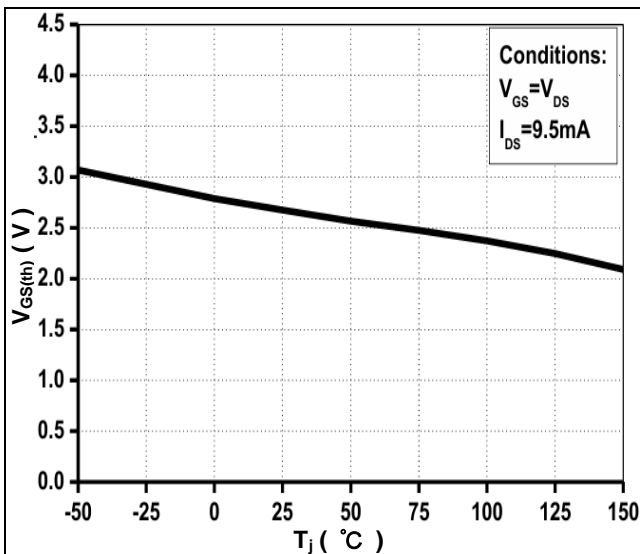


Figure 9. Threshold Voltage vs. Junction Temperature

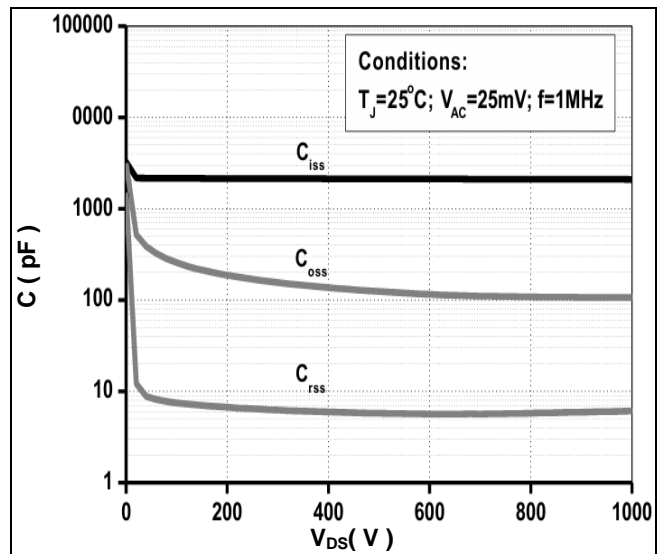


Figure 10. Capacitances vs. Drain-Source Voltage

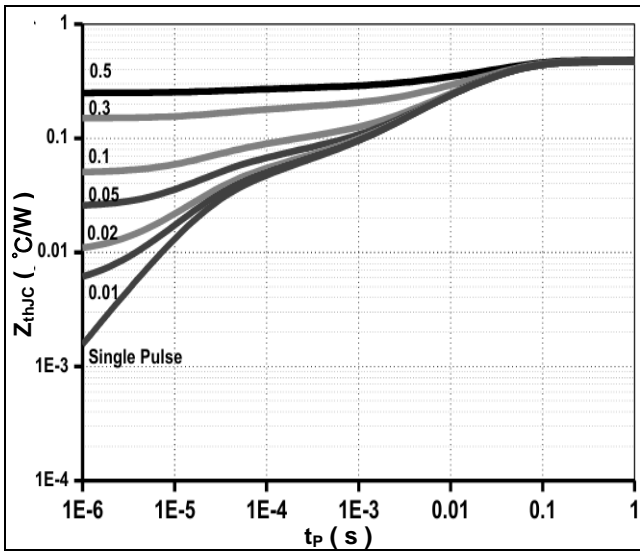


Figure 11. Transient Thermal Impedance vs. Junction Temperature

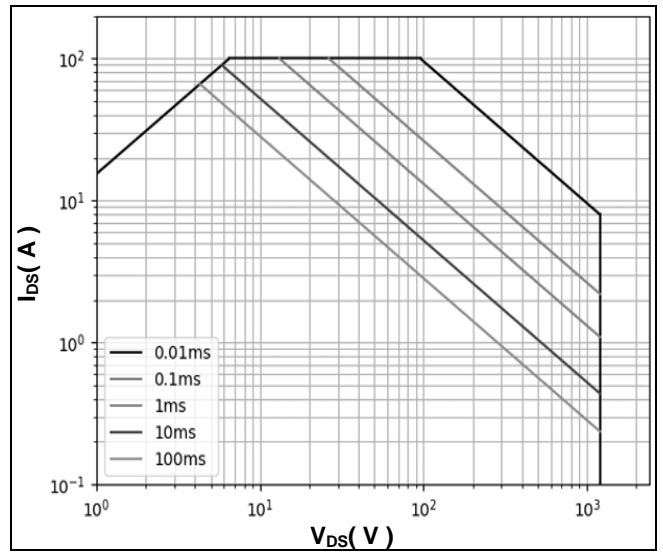


Figure 12. Safe Operating Area

Package Outline TO-247-3L

Symbol	Min.(mm)	Nom(mm)	Max.(mm)
A	4.80	5.00	5.20
A1	2.80	3.00	3.20
A2	2.26	2.41	2.56
b	1.10	1.20	1.30
b1	2.90		3.20
b2	2.90	3.00	3.10
b3	1.90	2.00	2.10
b4	2.00		2.20
c	0.50	0.60	0.70
D	20.8	21.0	21.2
D1		8.23	
D2		8.32	
D3		1.17	
d1	6.00	6.15	6.30
d2	2.20	2.30	2.40
E	15.6	15.8	16.0
E1		10.5	
E2		14.02	
E3		13.5	
e	5.34	5.44	5.54
L	19.72	19.92	20.12
L1		15.79	
L2		1.98	
φ1	7.1	7.19	7.3
φ2	3.5	3.6	3.7

