

Product Summary

V_{(BR)DSS}	R_{DS(on)TYP}	I_D@25°C
1200V	7.6mΩ@18V	266A

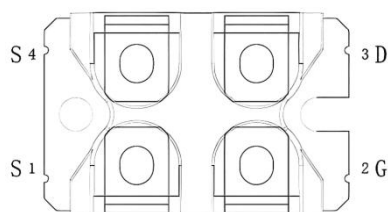
Feature

- Wide bandgap SiC MOSFET technology
- Low On-Resistance with High Blocking Voltage
- Low Capacitances with High-Speed switching
- Low reverse recovery (Q_{rr})

Application

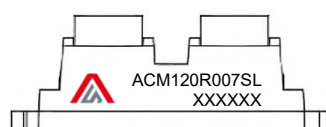
- Switch mode power supplies
- Renewable Energy
- On Board Charger
- High voltage DC/DC Converters

Package

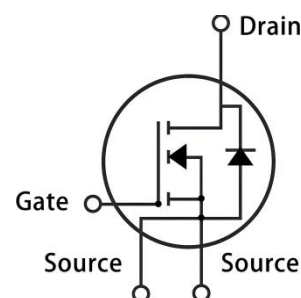


SOT-227

Marking



Circuit diagram



Absolute maximum ratings (T_C=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Value	Unit
Drain-Source Voltage	V_{DSmax}	$V_{GS}=0V, I_D=100\mu A$	1200	V
Gate-Source Voltage	V_{GSmax}	AC ($f > 1\text{ Hz}$)	-10/+25	V
Gate-Source Voltage	V_{GSOP}	Static	-4/+18	V
Continuous Drain Current	I_D	$V_{GS}=18V$	266	A
	I_D	$V_{GS}=18V, T_C=100^\circ C$	188	
Pulsed Drain Current	$I_{D,pulse}$	Pulse with t_p limited by T_{Jmax} at 1ms	465	A
		Pulse with t_p limited by T_{Jmax} at 100 μs	834	
Power Dissipation	P_D	$T_J=175^\circ C$	750	W
Thermal Resistance (Typ)	$R_{\theta JC}$	Junction to Case	0.2	$^\circ C/W$
Operating Junction Temperature	T_J		-55~ +175	$^\circ C$
Storage Temperature	T_{STG}		-55~ +175	$^\circ C$

Electrical characteristics (T_J=25°C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =100μA	1200			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =1200V, V _{GS} =0V			50	μA
Gate-Source leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =18V			250	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =50mA		2.9		V
		V _{DS} =V _{GS} , I _D =50mA, T _J =175°C		2		
Drain-source on-resistance	R _{DS(on)}	V _{GS} =18V, I _D =108A		7.6	12	mΩ
		V _{GS} =18V, I _D =108A, T _J =175°C		12.4		
Transconductance	g _{fs}	V _{GS} =18V, I _D =108A		78		S
		V _{GS} =18V, I _D =108A, T _J =175°C		59		
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =1000V, V _{GS} =0V V _{AC} =25mV, f =100kHz		15316		pF
Output Capacitance	C _{oss}			445		
Reverse Transfer Capacitance	C _{rss}			37		
Total Gate Charge	Q _g	V _{DS} =800V, V _{GS} =-4V/18V I _D =108A		560		nC
Gate-Source Charge	Q _{gs}			314		
Gate-Drain Charge	Q _{gd}			149		
Internal Gate Resistance	R _{G(int)}	V _{AC} =25mV, f =1MHz		0.8		Ω
Source-Drain Diode characteristics						
Diode Forward Current	I _S	V _{GS} =-4V, T _C =25°C		163		A
Diode Forward voltage	V _{SD}	V _{GS} =-4V, I _{SD} =54A		4.1		V
		V _{GS} =-4V, I _{SD} =54A, T _J =175°C		3.6		

Module characteristics

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Isolation Voltage	V _{ISO}	RMS, f = 50Hz, t = 60sec I _{ISOL} ≤ 10mA		4.3		kV
Storage Temperature	T _{stg}		-55		+175	°C
Power Terminals Torque	M	Screw: M4	1		1.5	N·m
Mounting Torque	M	Screw: M4	1		1.5	
Weight	G			29		g

Typical Characteristics

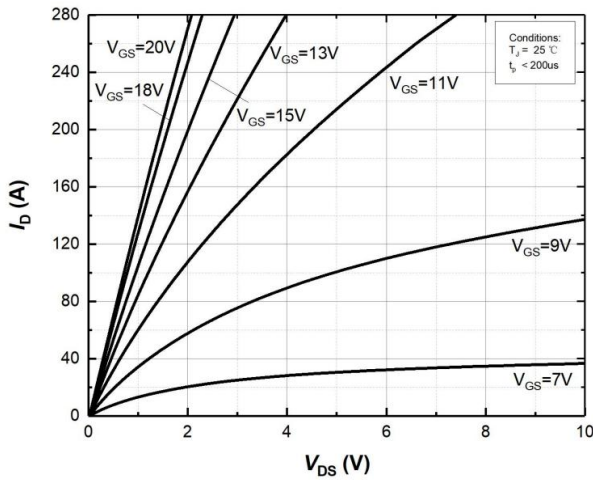


Figure 1. Output characteristics at $T_j=25^{\circ}\text{C}$

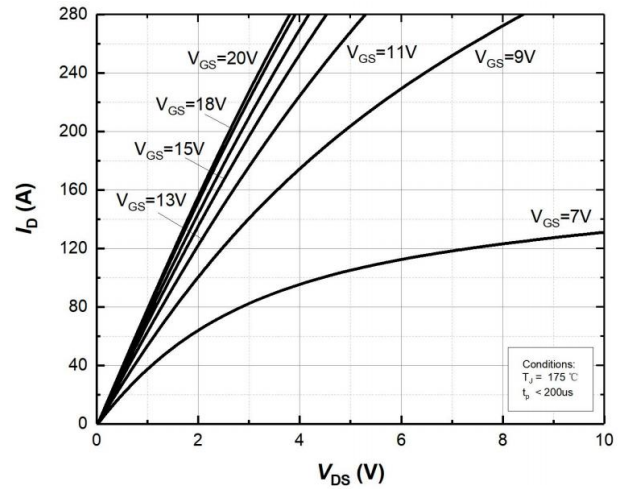


Figure 2. Output characteristics at $T_j=175^{\circ}\text{C}$

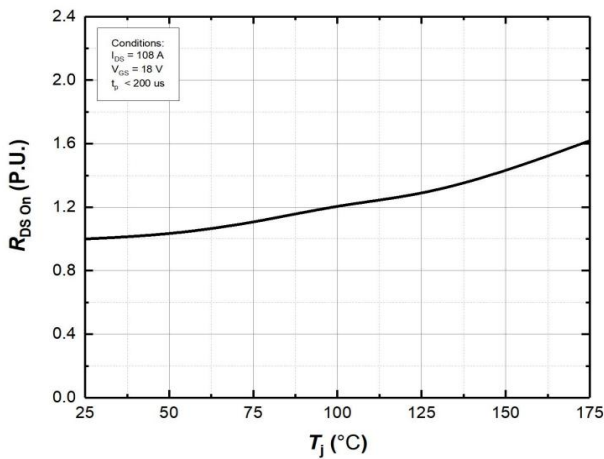


Figure 3. Normalized On-Resistance vs. Temperature

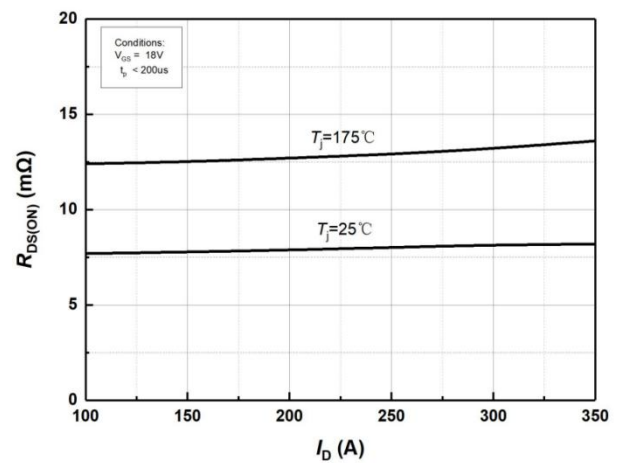


Figure 4. On-Resistance vs. Drain current for Various Temperature

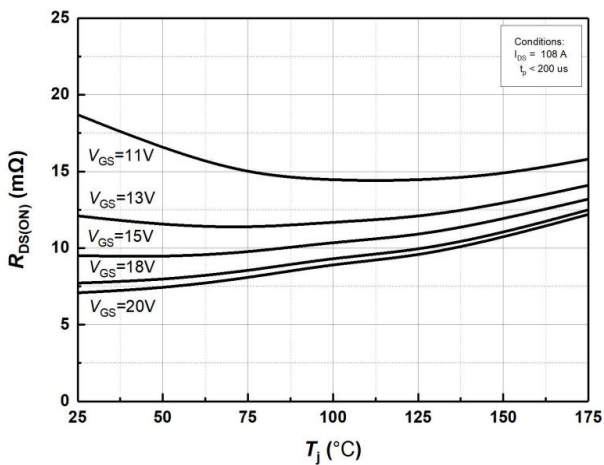


Figure 5. On-Resistance vs. Temperature for Various Gate Voltage

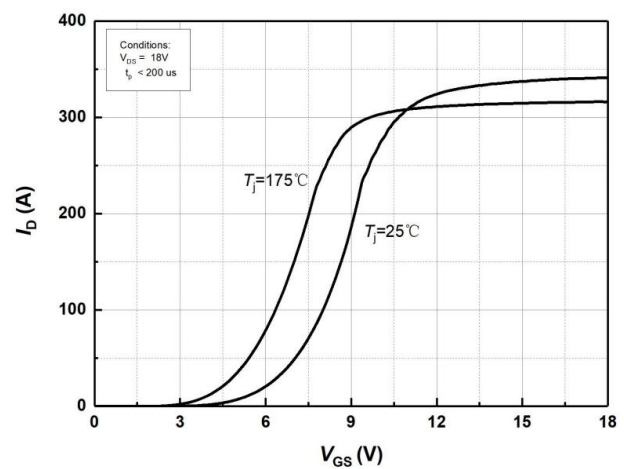


Figure 6. Transfer Characteristics for Various Junction Temperatures

Typical Characteristics

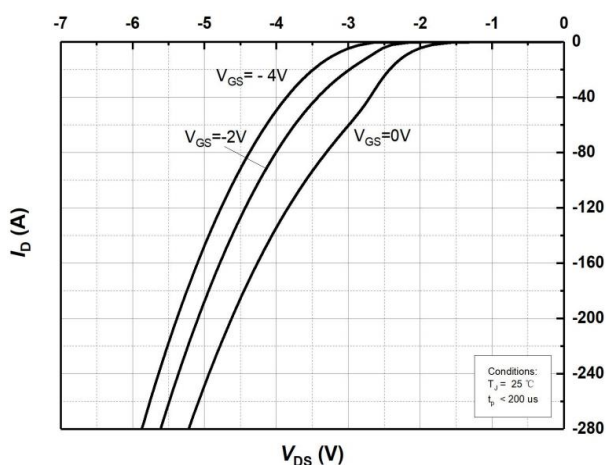


Figure 7. Body Diode Characteristics at $T_j=25^{\circ}\text{C}$

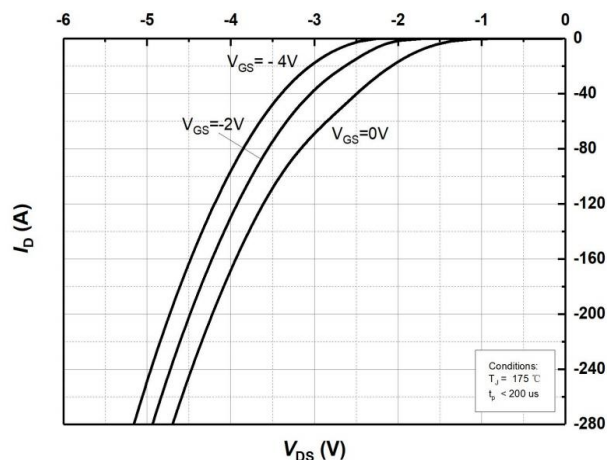


Figure 8. Body Diode Characteristics at $T_j=175^{\circ}\text{C}$

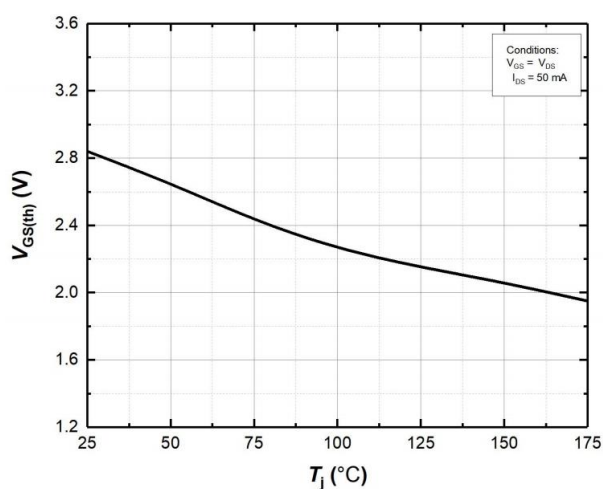


Figure 9. Threshold Voltage vs. Temperature

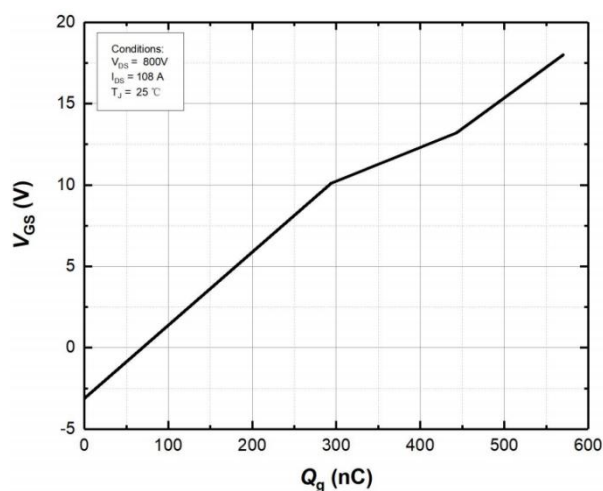


Figure 10 Gate Charge Characteristics

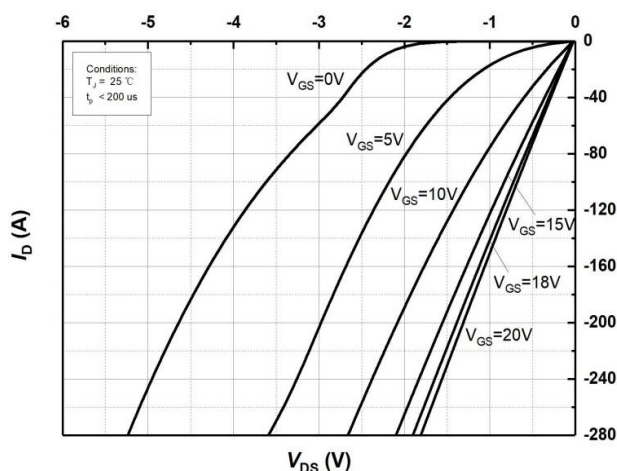


Figure 11. 3rd Quadrant Characteristic at $T_j=25^{\circ}\text{C}$

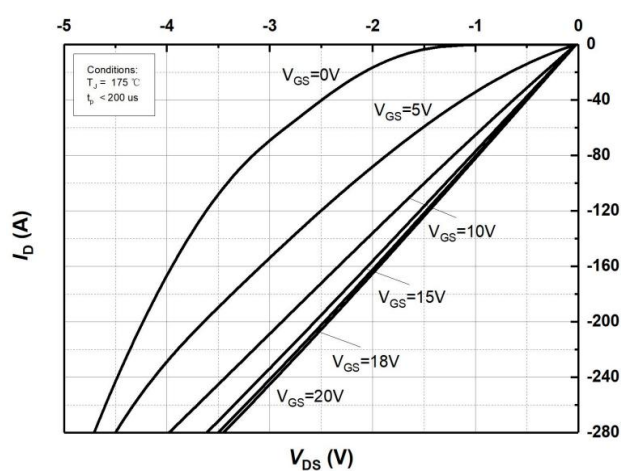


Figure 12. 3rd Quadrant Characteristic at $T_j=175^{\circ}\text{C}$

Typical Characteristics

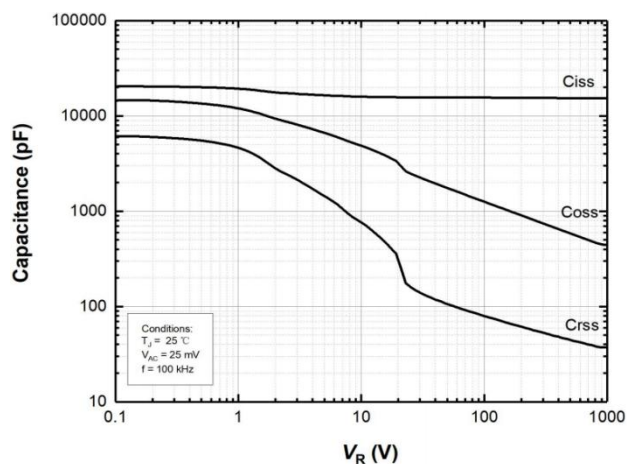


Figure 13. Capacitances vs. Drain-Source Voltage (0 – 1000V)

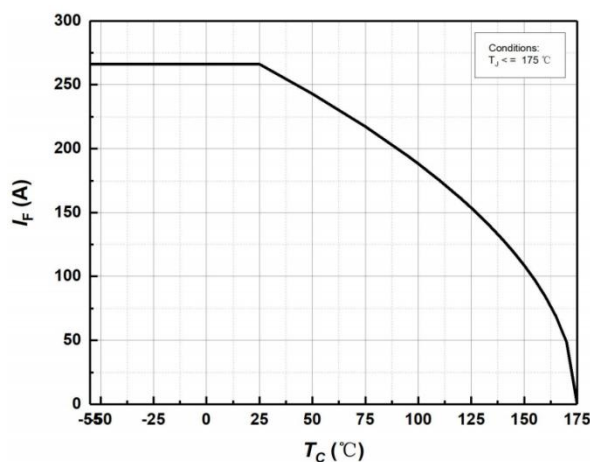


Figure 14. Continuous Drain Current Derating vs Case Temperature

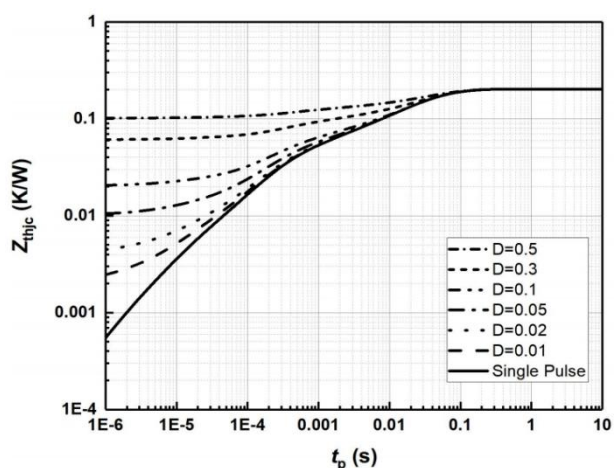


Figure 15. Transient Thermal Impedance (Junction – Case)

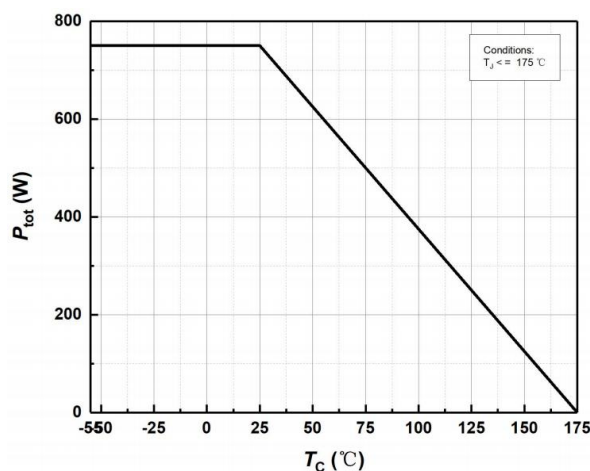


Figure 16. Maximum Power Dissipation Derating vs. Case Temperature

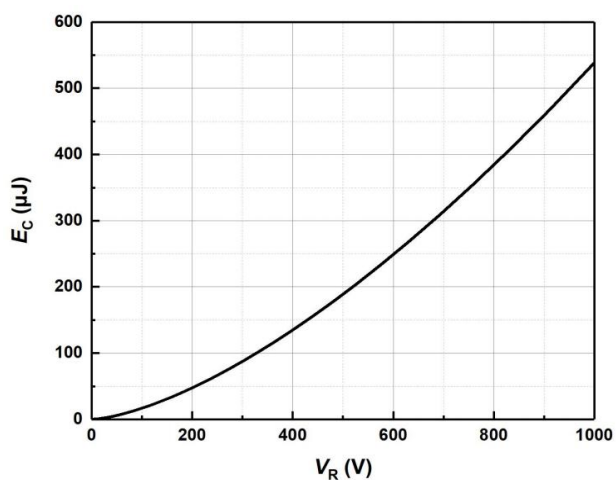


Figure 17. Output Capacitor Stored Energy

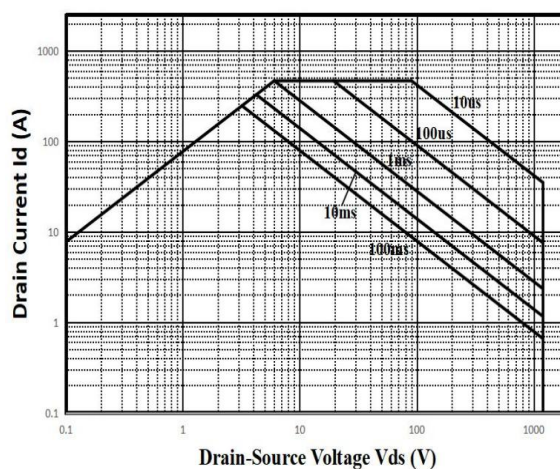
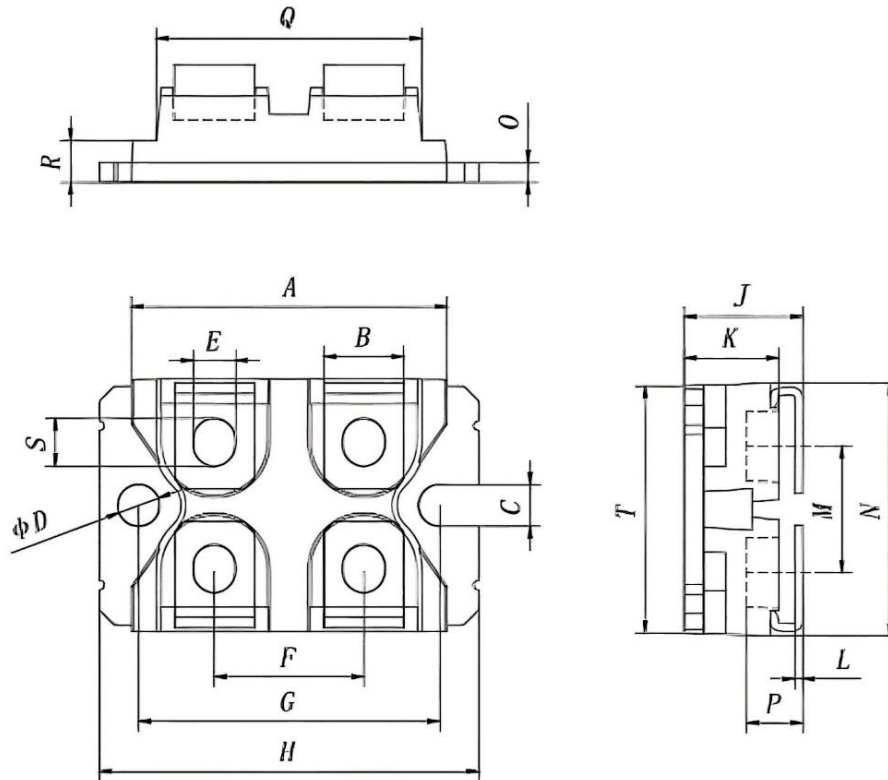


Figure 18. Safe Operating Area

SOT-227 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	31.600	32.600	1.244	1.283
B	7.900	8.300	0.311	0.327
C	4.100	4.300	0.161	0.169
D	4.100	4.300	0.161	0.169
E	4.100	4.300	0.161	0.169
F	14.800	15.200	0.583	0.598
G	30.000	30.400	1.181	1.197
H	37.900	38.300	1.492	1.508
J	11.750	12.150	0.463	0.478
K	9.400	9.800	0.370	0.386
L	0.750	0.850	0.030	0.033
M	12.400	13.000	0.488	0.512
N	25.500	25.900	1.004	1.020
O	1.900	2.100	0.075	0.083
P	5.300	5.900	0.209	0.232
Q	26.500	27.200	1.043	1.071
R	3.900	4.500	0.154	0.177
S	4.550	4.950	0.179	0.195
T	24.700	25.300	0.972	0.996