

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	$I_D@T_c=25^{\circ}C$
1200V	16m Ω @18V	99A

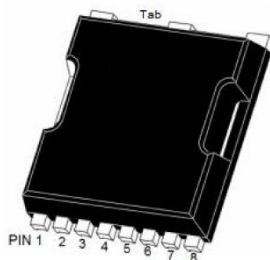
Feature

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

Application

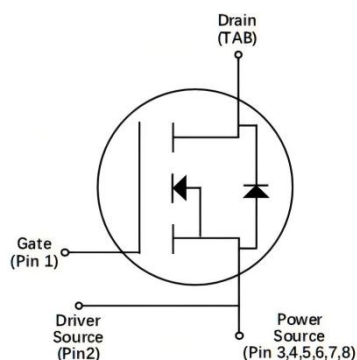
- Switch mode power supplies
- Renewable energy
- On Board Charger
- High voltage DC/DC converters

Package

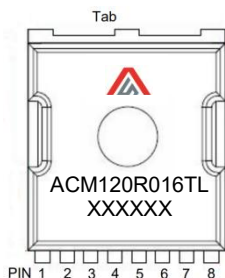


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Circuit diagram



Marking



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

Parameter	Symbol	Test Condition	Value	Unit
Drain-Source Voltage	V _{DS}	V _{GS} = 0V, I _D = 100μA	1200	V
Gate-Source Voltage	V _{GSmax}	AC (f > 1Hz)	-10/+25	V
Gate-Source Voltage	V _{GSOP}	Static	-4/+15 -4/+18	V
Continuous Drain Current	I _D	V _{GS} = 15V, T _C = 25°C V _{GS} = 18V, T _C = 25°C	99	A
	I _D	V _{GS} = 15V, T _C = 100°C V _{GS} = 18V, T _C = 100°C	70	
Pulsed Drain Current	I _{D,pulse}	Pulse with t _p limited by T _{jmax} at 1 ms	264	A
		Pulse with t _p limited by T _{jmax} at 100 μs	462	
Power Dissipation	P _D	T _J = 175°C	326	W
Thermal Resistance (Typ)	R _{θJC}	Junction to Case	0.46	°C/W
Junction Temperature	T _J		-55~ +175	°C
Storage Temperature	T _{STG}		-55~ +175	°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,T _J =175°C			50	μA
Gate-Source leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =15V V _{DS} =0V, V _{GS} =18V			250	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =23mA		2.9		V
		V _{DS} =V _{GS} , I _D =23mA, T _J =175°C		2		
Drain-source on-resistance	R _{DS(on)}	V _{GS} =15V, I _D =75A		20		mΩ
		V _{GS} =18V, I _D =75A		16	24	
		V _{GS} =20V, I _D =75A		15		
		V _{GS} =15V, I _D =75A, T _J =175°C		36		
		V _{GS} =18V, I _D =75A, T _J =175°C		34		
		V _{GS} =20V, I _D =75A, T _J =175°C		33		
Transconductance	g _{fs}	V _{GS} =18V, I _D =75A		60		S
		V _{GS} =18V, I _D =75A, T _J =175°C		42		
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} =1000V, V _{GS} =0V V _{AC} =25mV, f =100kHz		5806		pF
Output Capacitance	C _{oss}			216		
Reverse Transfer Capacitance	C _{rss}			14		
Internal Gate Resistance	R _{G(int)}	V _{AC} =25mV, f =1 MHz		0.8		Ω
Total Gate Charge	Q _g	V _{DS} =800V, V _{GS} =-4/18V V _{GS} = -4V/15V, I _D =75A		247		nC
Gate-Source Charge	Q _{gs}			83		
Gate-Drain Charge	Q _{gd}			77		

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Source-Drain Diode characteristics						
Diode Forward Current	I_S	$V_{GS} = -4V, T_C = 25^\circ C$		68		A
Diode Forward voltage	V_{SD}	$V_{GS} = -4V, I_{SD} = 37.5A$		3.9		V
		$V_{GS} = -4V, I_{SD} = 37.5A, T_J = 175^\circ C$		3.3		V

Typical Characteristics

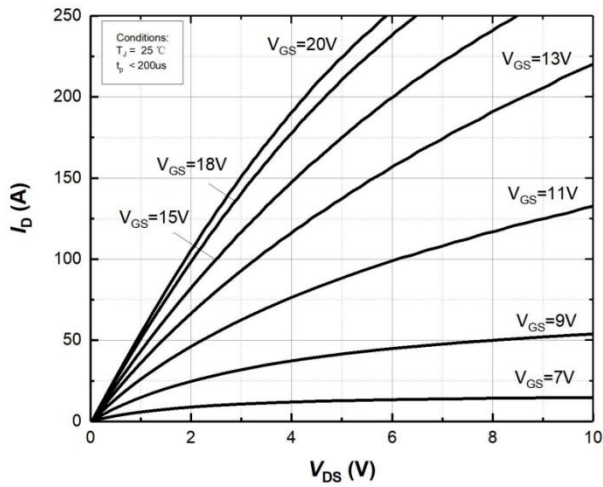


Figure 1. Output characteristics at $T_j=25^\circ\text{C}$

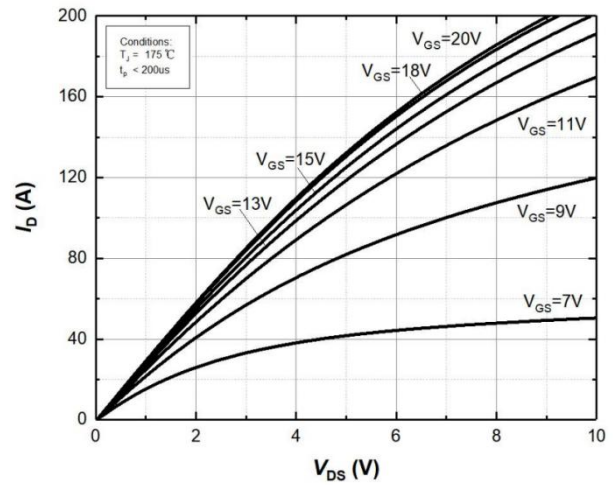


Figure 2. Output characteristics at $T_j=175^\circ\text{C}$

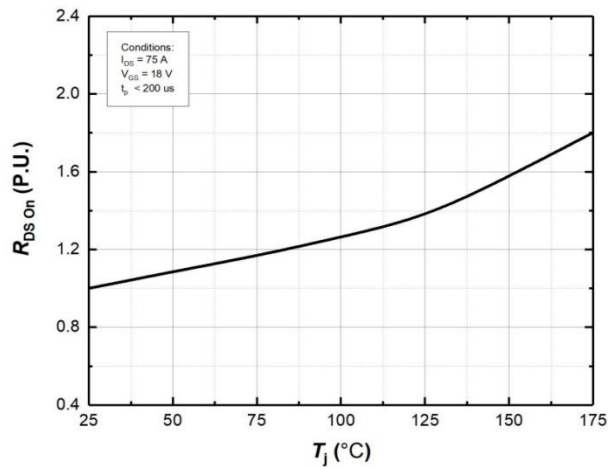


Figure 3. Normalized On-Resistance vs. Temperature

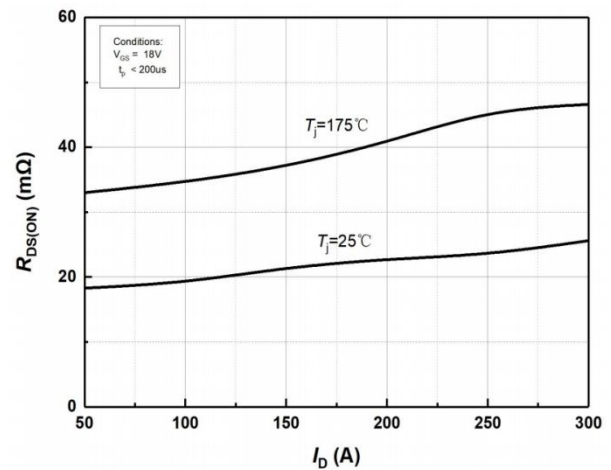


Figure 4. On-Resistance vs. Drain current for Various Temperature

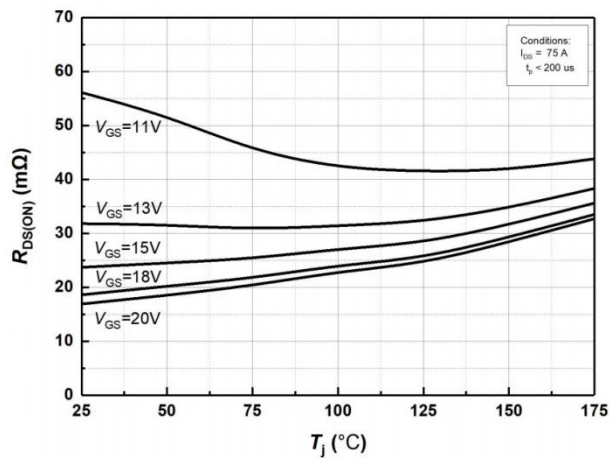


Figure 5. On-Resistance vs. Temperature for Various Gate Voltage

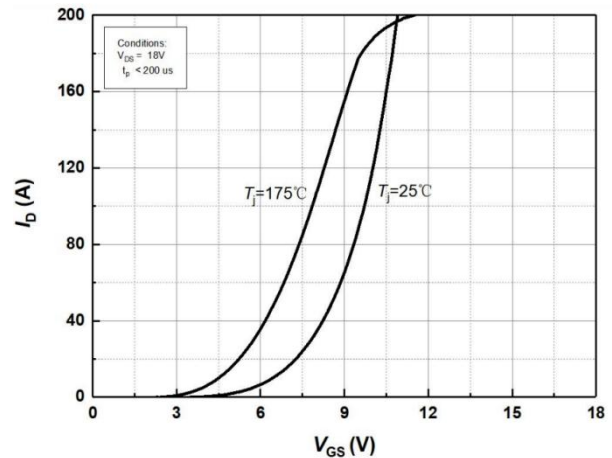


Figure 6. Transfer Characteristics for Various Junction Temperatures

Typical Characteristics

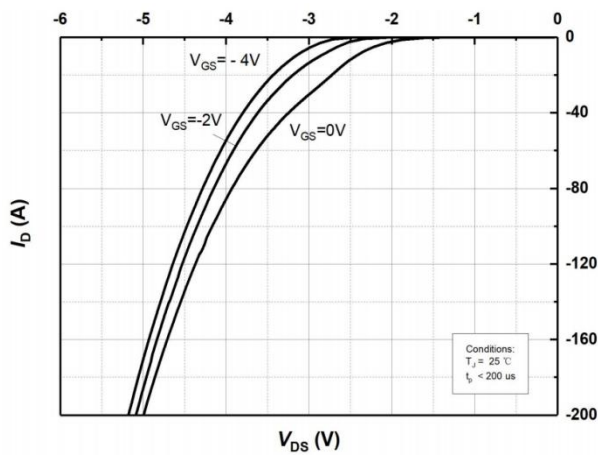


Figure 7. Body Diode Characteristics at $T_j=25^{\circ}\text{C}$

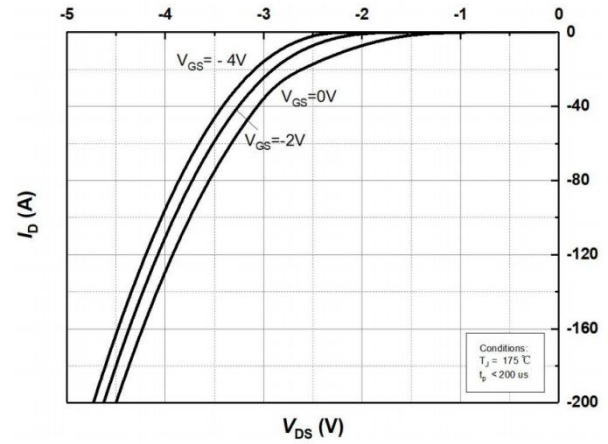


Figure 8. Body Diode Characteristics at $T_j=175^{\circ}\text{C}$

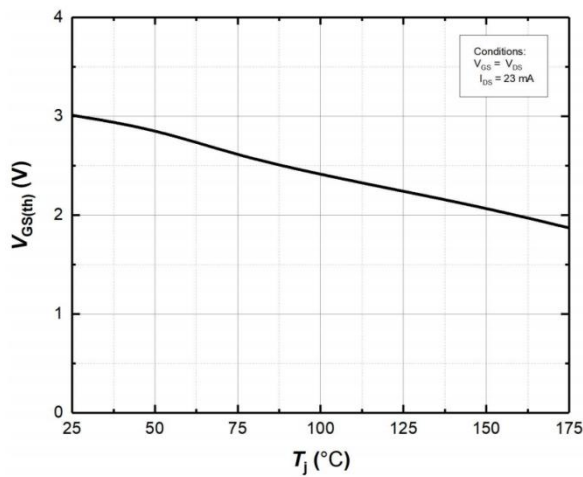


Figure 9. Threshold Voltage vs. Temperature

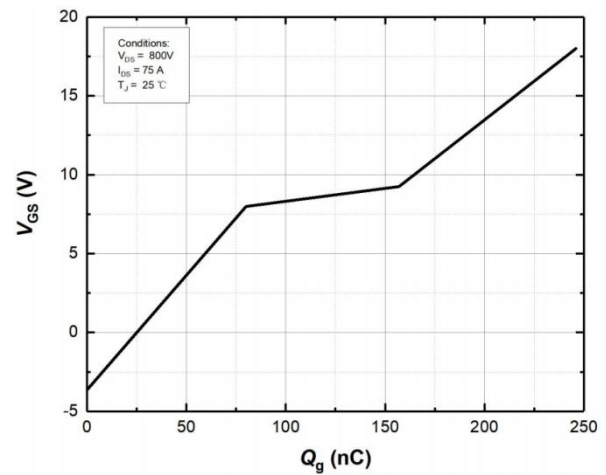


Figure 10. Gate Charge Characteristics

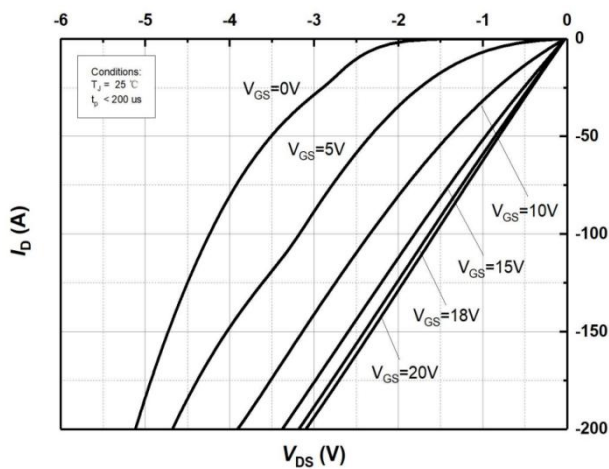


Figure 11. 3rd Quadrant Characteristic at $T_j=25^{\circ}\text{C}$

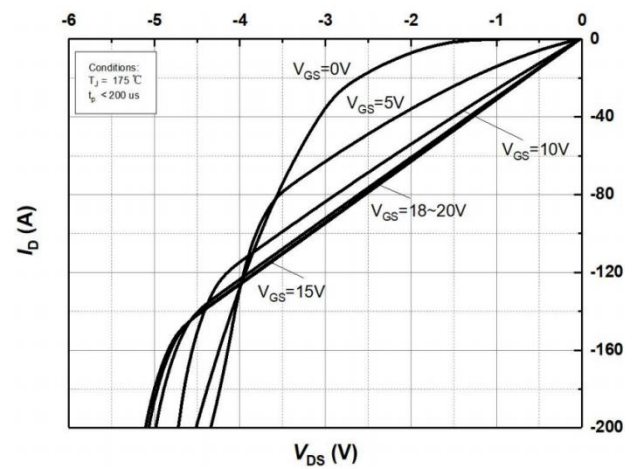


Figure 12. 3rd Quadrant Characteristic at $T_j=175^{\circ}\text{C}$

Typical Characteristics

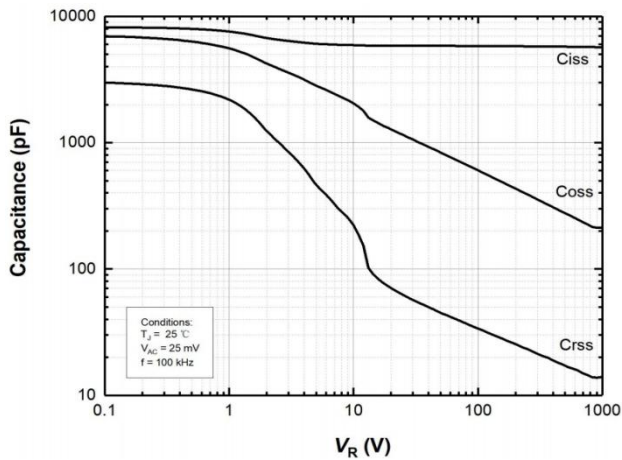


Figure 13. Capacitances vs. Drain-Source Voltage (0 – 1000V)

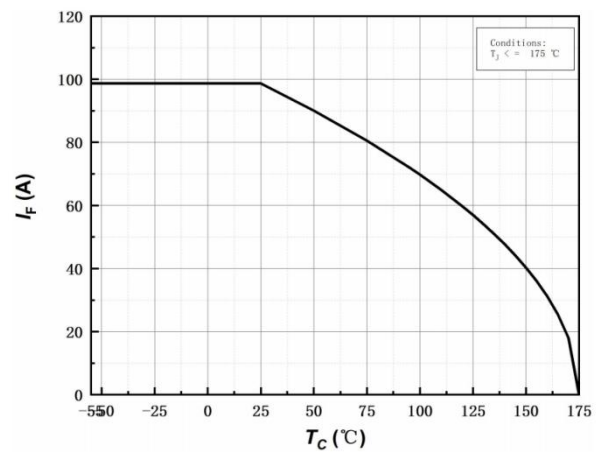


Figure 14. Continuous Drain Current Derating vs Case Temperature

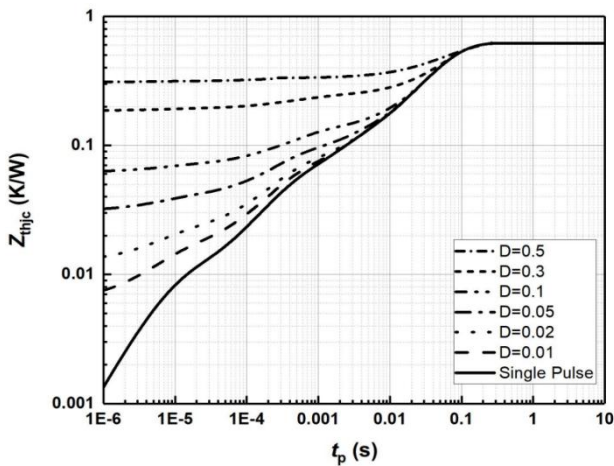


Figure 15. Transient Thermal Impedance (Junction – Case)

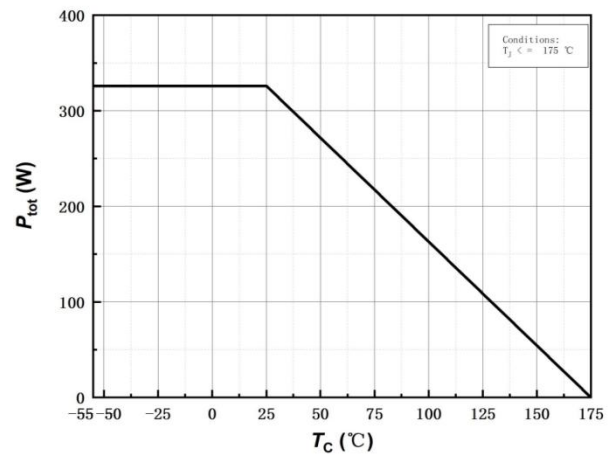


Figure 16. Maximum Power Dissipation Derating vs. Case Temperature

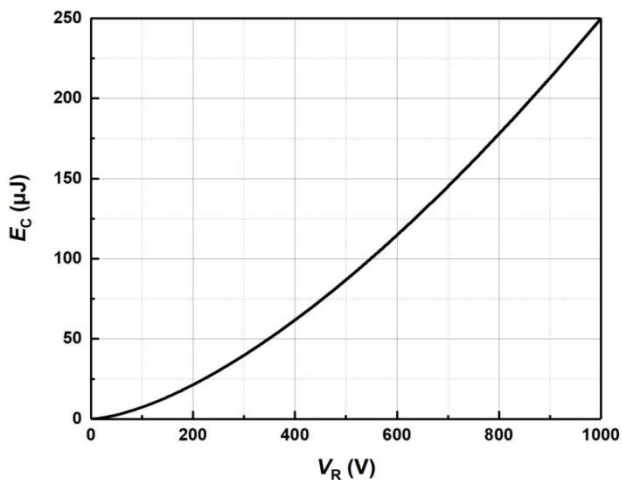


Figure 17. Output Capacitor Stored Energy

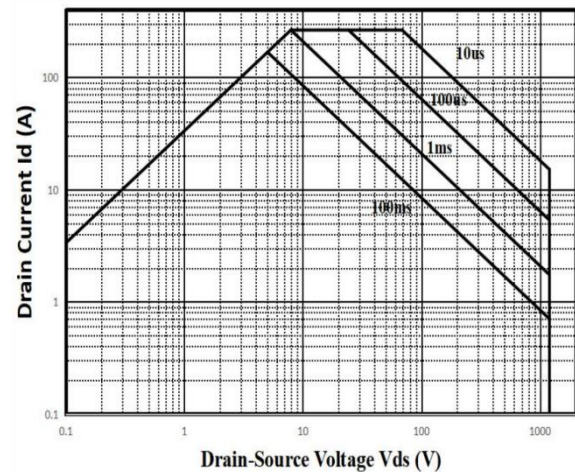
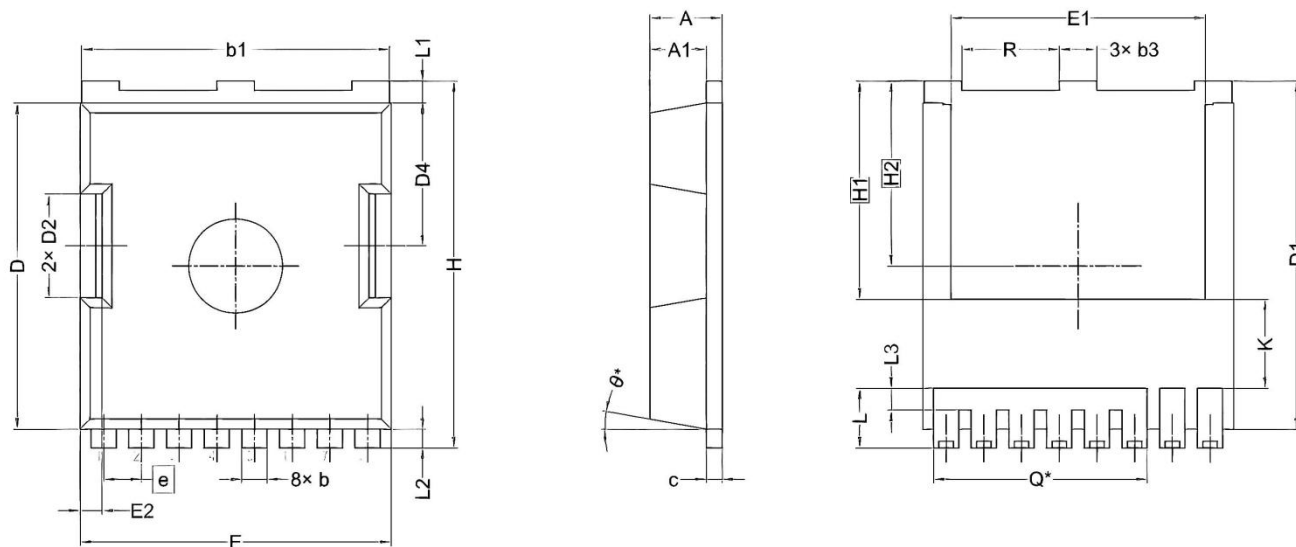


Figure 18. Safe Operating Area

TOLL Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.700	1.900	0.067	0.075
b	0.700	0.900	0.028	0.035
b1	9.700	9.900	0.382	0.390
b3	1.100	1.300	0.043	0.051
c	0.400	0.600	0.016	0.024
D	10.280	10.480	0.405	0.413
D1	10.980	11.180	0.432	0.440
D2	3.200	3.400	0.126	0.134
D4	4.450	4.650	0.175	0.183
E	9.800	10.000	0.386	0.394
E1	8.000	8.200	0.315	0.323
E2	0.600	0.800	0.024	0.031
e	1.200 BSC.		0.047 BSC.	
H	11.580	11.780	0.456	0.464
H1	6.950 BSC.		0.274 BSC.	
H2	5.890 BSC.		0.232 BSC.	
K	2.800 REF.		0.110 REF.	
L	1.400	2.100	0.055	0.083
L1	0.600	0.800	0.024	0.031
L2	0.500	0.700	0.020	0.028
L3	0.300	0.800	0.012	0.031
Q	6.800 REF.		0.268 REF.	
R	3.000	3.200	0.118	0.126
theta	10° REF.		10° REF.	