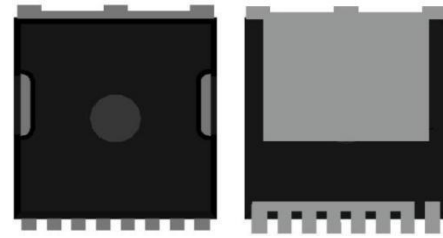


N-Channel Enhancement Mode MOSFET

Symbol	Value	Unit
V_{DS}	100	V
I_D	184	A
$R_{DS(ON)}$	4.0	m Ω



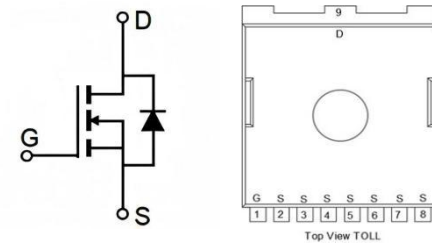
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Features

- Advanced SGT cell design
- Low Thermal Resistance
- Low Gate Charge
- Fast Switching Speed

Applications

- Motor/Body Load Control
- Load Switch
- PWM Application
- DC-DC converters and Off-line



Absolute Maximum Ratings (at $T_a=25^\circ\text{C}$ unless otherwise specified)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Cure	$T_C=25^\circ\text{C}$	I_D	184	A
	$T_C=100^\circ\text{C}$		117	
Peak Drain Current, Pulsed ¹⁾		I_{DM}	Refer to Fig.4	A
Single Pulse Avalanche Energy ²⁾		E_{AS}	900	mJ
Power Dissipation	$T_C=25^\circ\text{C}$	P_{tot}	313	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~ 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	0.4	$^\circ\text{C/W}$
Thermal Resistance from Junction to Ambient ³⁾	$R_{\theta JA}$	66	$^\circ\text{C/W}$

Note:

1) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$, Repetitive rating, pulse width limited by junction temperature $T_J(\text{MAX}) = 150^\circ\text{C}$.

2) EAS condition: Starting $T_J=25^\circ\text{C}$, $V_{DD}=50\text{V}$, $V_{GS}=10\text{V}$, $R_G=25\text{ohm}$, $L=3\text{mH}$, $I_{AS}=24.5\text{A}$, $V_{DD}=0\text{V}$ during time in avalanche.

3) Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate in still air.

Electrical Characteristics(at Ta=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Static characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V; I _D =250uA	100	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =80V; V _{GS} =0V	-	-	1	μA
Gate Leakage Current	I _{GSS}	V _{GS} =±20V; V _{DS} =0V	-	-	±100	nA
Gate-Source Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} ; I _D =250uA	2.1	2.9	3.8	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V; I _D =20A	-	4.0	4.6	mΩ
Dynamic characteristics						
Input Capacitance	R _g	f=1MHz	-	2.3	-	Ω
Reverse Transfer Capacitance	C _{iss}	V _{GS} =0V; V _{DS} =50V; f=1MHz	-	3825	-	pF
Transconductance	C _{oss}		-	1858	-	pF
C _{oss} Stored Energy	C _{rss}		-	390	-	pF
Turn-on Energy	Q _g	V _{DS} =50V; V _{GS} =0 to 10V; I _D =20A	-	87	-	nC
Turn-off Energy	Q _{gs}		-	34	-	nC
Total Gate Charge	Q _{gd}		-	17	-	nC
Gate-Source Charge	t _{d(on)}	V _{DS} =50V; V _{GS} =10V; I _D =20A; R _{g(ext)} =6.2Ω	-	29	-	ns
Gate-Drain Charge	t _r		-	41	-	ns
Internal Gate Resistor	t _{d(off)}		-	68	-	ns
Turn-on Delay Time	t _f		-	35	-	ns
Body-Diode Parameters						
Drain-Source Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V	-	-	1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =20A, di/dt=100A/μs	55	77	103	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	183	-	nC

Typical Characteristics

Figure 1: Power De-rating

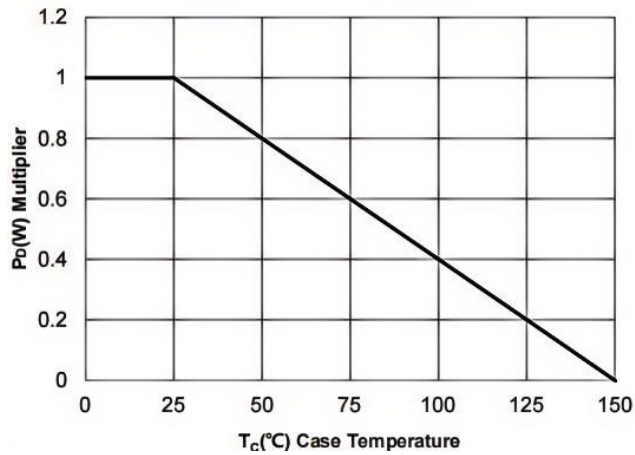


Figure 2: Current De-rating

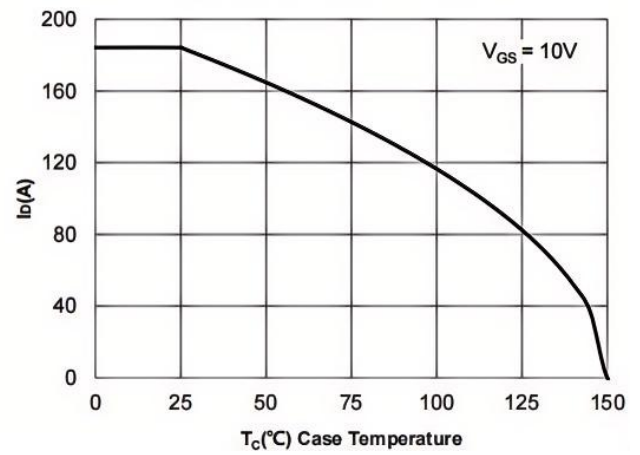


Figure 3: Normalized Maximum Transient Thermal Impedance

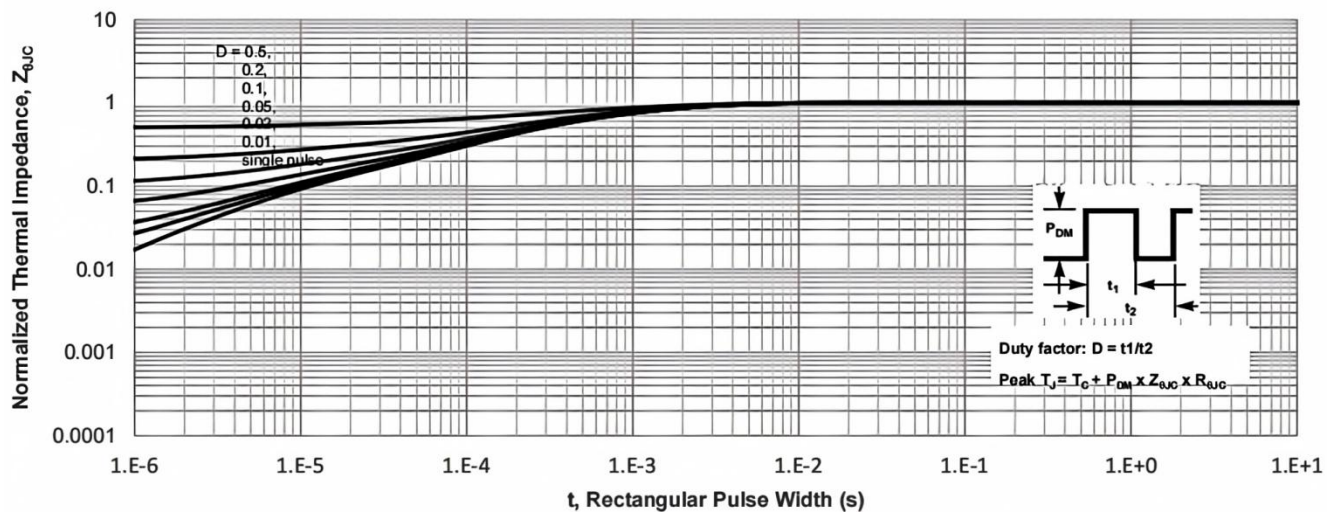


Figure 4: Peak Current Capacity

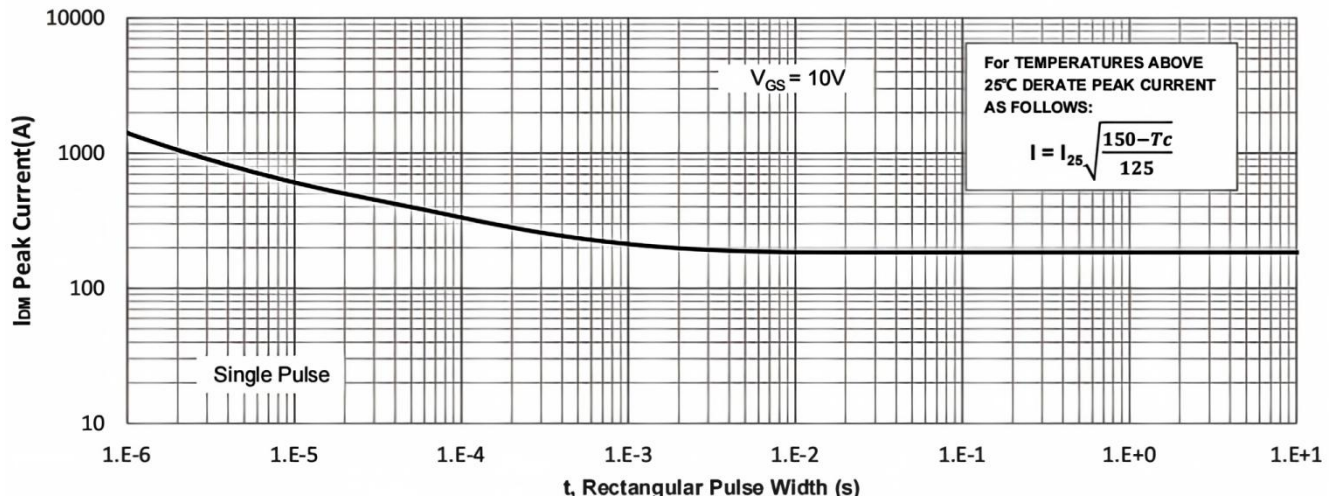


Figure 5: Output Characteristics

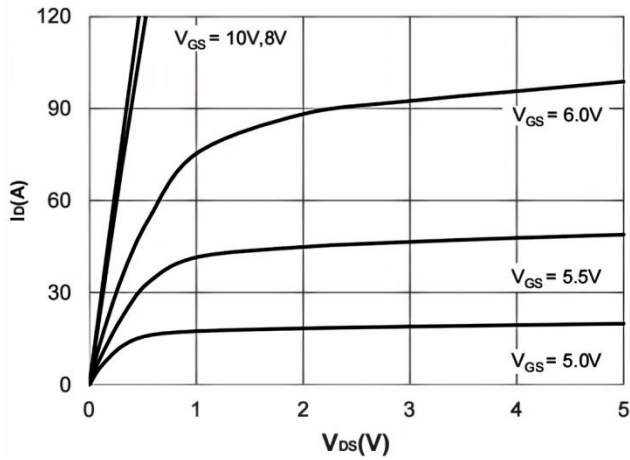


Figure 6: Typical Transfer Characteristics

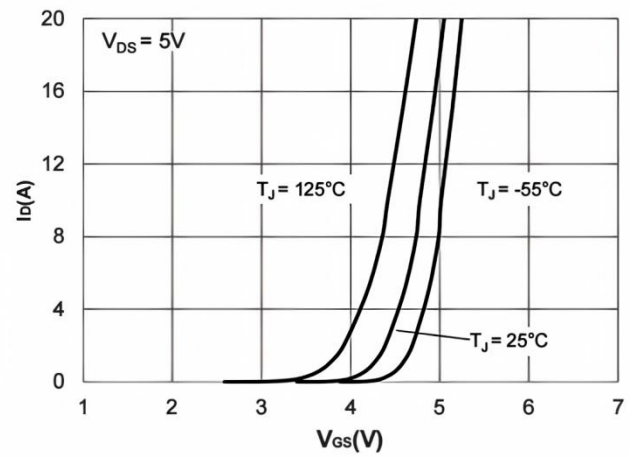


Figure 7: On-resistance vs. Drain Current

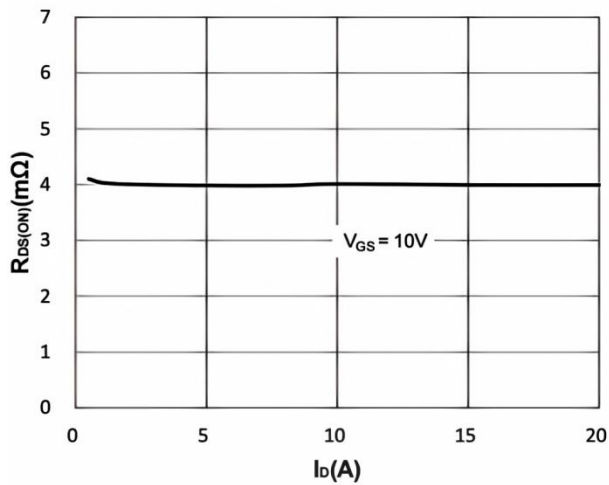


Figure 8: Body Diode Characteristics

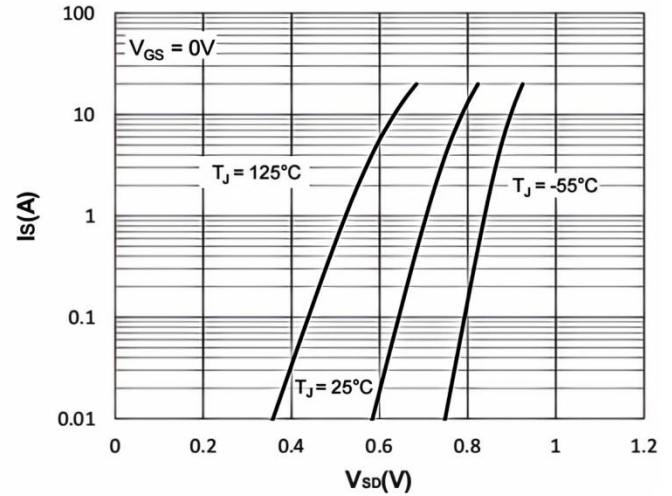


Figure 9: Gate Charge Characteristics

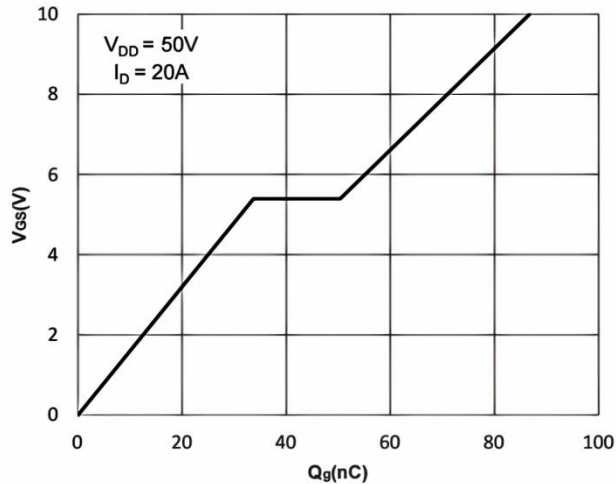


Figure 10: Capacitance Characteristics

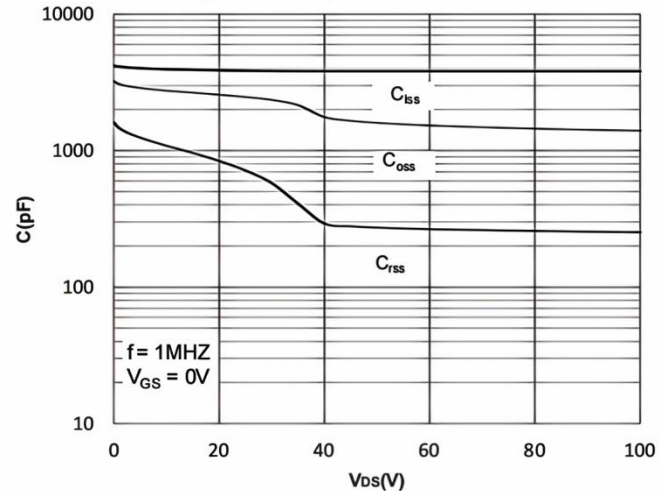


Figure 11: Normalized Breakdown voltage vs. Junction Temperature

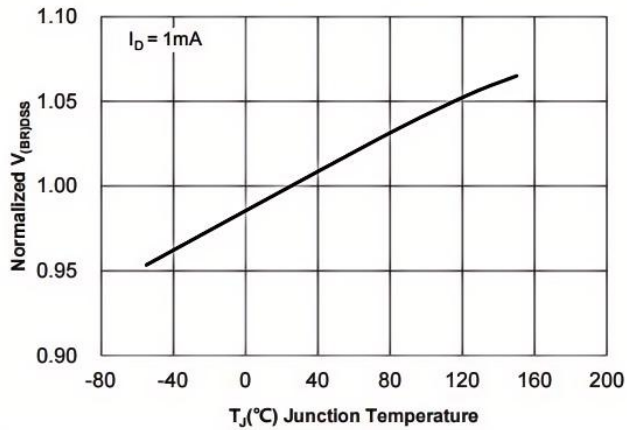


Figure 12: Normalized on Resistance vs. Junction Temperature

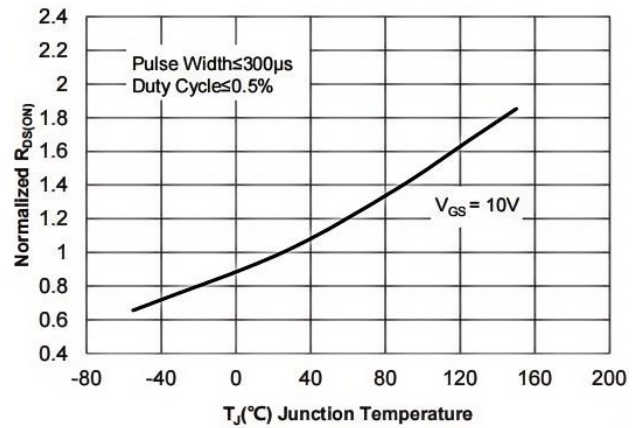


Figure 13: Normalized Threshold Voltage vs. Junction Temperature

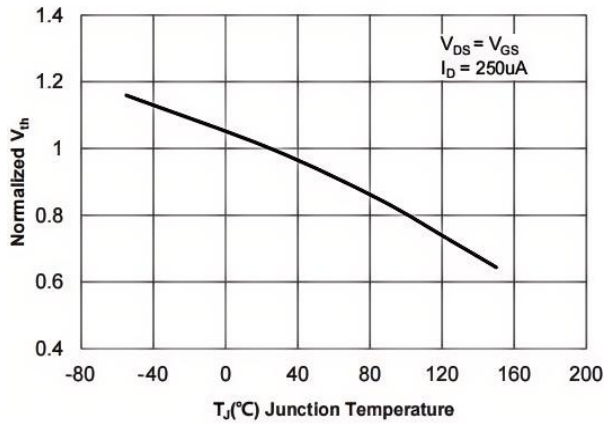


Figure 14: $R_{DS(ON)}$ vs. V_{GS}

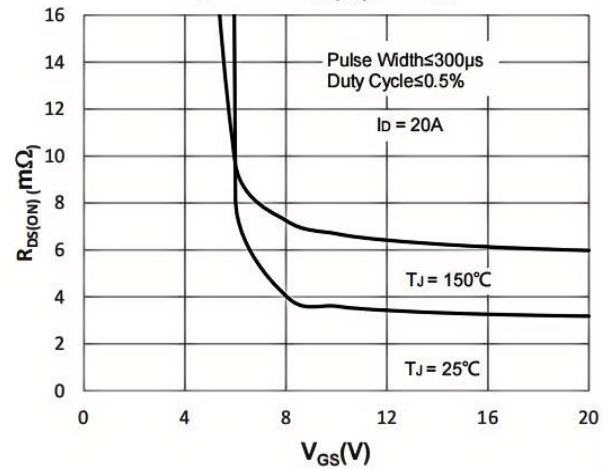
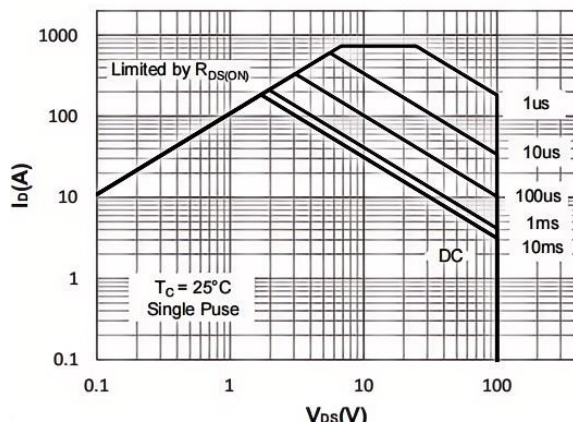
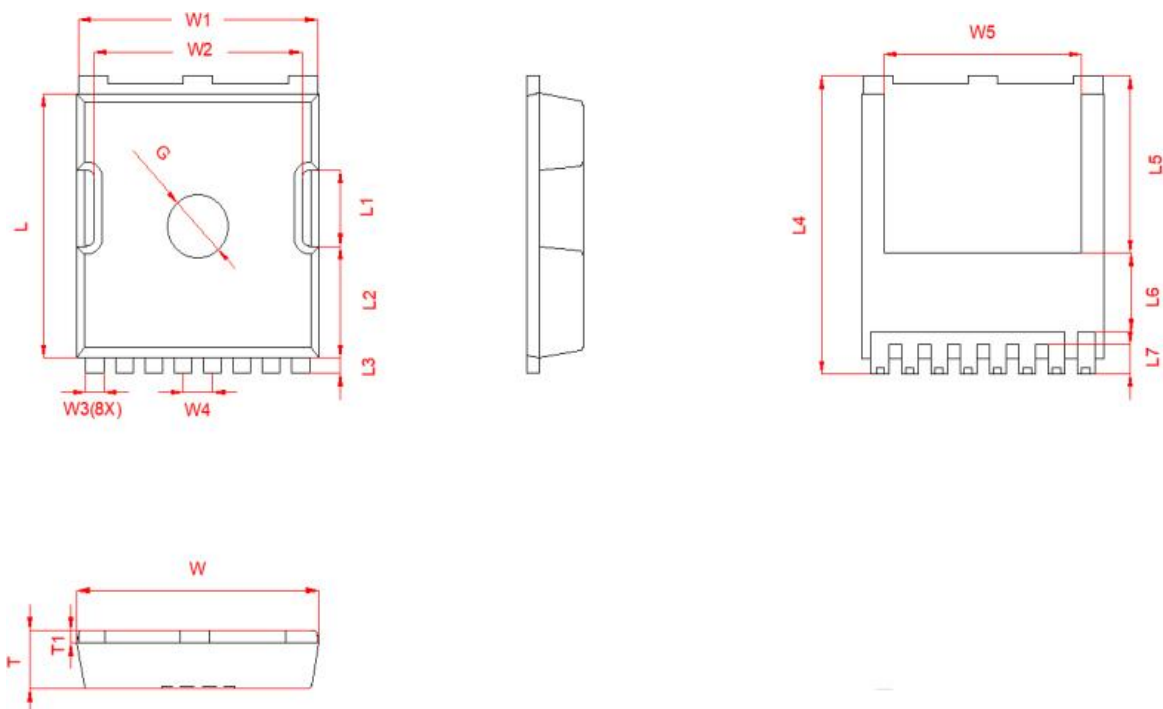


Figure 15: Maximum Safe Operating Area



Package Outline Dimensions (Units: mm)

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符号	尺寸		符号	尺寸		符号	尺寸	
	Min	Max		Min	Max		Min	Max
W	9.7	10.1	L	10.28	10.58	L6	(3.1)	
W1	9.7	9.9	L1	(3.0)		L7	1.1	1.3
W2	(8.5)		L2	4.2	4.6	T	2.2	2.4
W3	0.6	0.85	L3	0.5	0.7	T1	0.4	0.6
W4	1.1	1.3	L4	11.48	11.88	G(Φ)	(2.5)	
W5	(8.1)		L5	(6.9)				

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