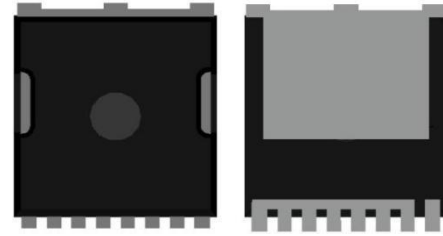


N-Channel Enhancement Mode MOSFET

Symbol	Value	Unit
V_{DS}	100	V
I_D	384	A
$R_{DS(ON)}$	1.1	m Ω



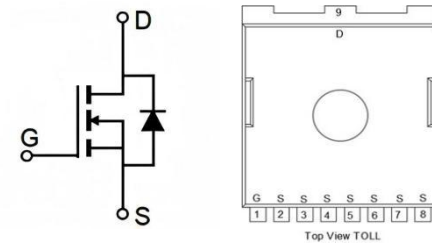
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Features

- 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	384	A
Peak Drain Current, Pulsed 1)	I_{DM}	1535	A
Single Pulse Avalanche Energy 2)	E_{AS}	2626	mJ
Power Dissipation $T_C=25^\circ\text{C}$	P_{tot}	430	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)	$R_{\theta JA}$	55	$^\circ\text{C/W}$

Note:

- 1) Pulse Test: Pulse Width $\leq 100\mu\text{s}$, Duty Cycle $\leq 2\%$, Repetitive rating, pulse width limited by junction temperature $T_J(\text{MAX}) = 150^\circ\text{C}$.
- 2) Limited by $T_J(\text{MAX})$, starting $T_J = 25^\circ\text{C}$, $L = 0.5\text{mH}$, $V_{GS} = 10\text{V}$, $V_{DD} = 75\text{V}$.
- 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} =100V; 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	2.5	3.3	4.1	V
Drain-Source On-State Resistance	R _{DS(on)}	V _{GS} =10V; I _D =50A		1.1	1.4	mΩ
Dynamic characteristics						
Input Capacitance	R _g	f=1MHz	-	1.7	-	Ω
Output Capacitance	g _{fs}	V _{DS} =5V; I _D =100A	-	360	-	S
Reverse Transfer Capacitance	C _{iss}	V _{GS} =0V; V _{DS} =50V; f=1MHz	-	12000	-	pF
Transconductance	C _{oss}		-	3000	-	pF
C _{oss} Stored Energy	C _{rss}		-	128	-	pF
Turn-on Energy	Q _g	V _{DS} =50V; V _{GS} =10V; I _D =100A	-	230	-	nC
Turn-off Energy	Q _{gs}		-	67	-	nC
Total Gate Charge	Q _{gd}		-	80	-	nC
Gate-Source Charge	t _{d(on)}	V _{DS} =50V; V _{GS} =10V; I _D =100A; R _{g(ext)} =4.7Ω	-	55	-	ns
Gate-Drain Charge	t _r		-	92	-	ns
Internal Gate Resistor	t _{d(off)}		-	26	-	ns
Turn-on Delay Time	t _f		-	35	-	ns
Body-Diode Parameters						
Drain-Source Diode Forward Voltage	V _{SD}	I _F =100A, V _{GS} =0V	-	0.9	1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =50A, V _{DS} =50V	-	92	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}	di/dt=100A/μs	-	236	-	nC

Typical Characteristics

Fig.1 Typ. transfer characteristics

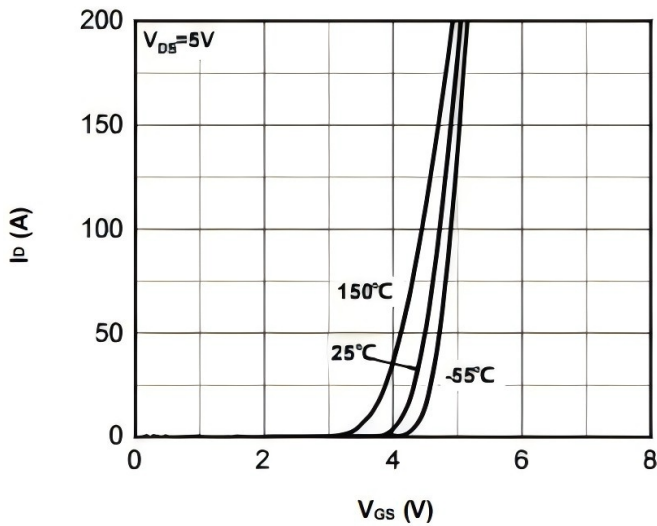


Fig.2 Typ. output characteristics

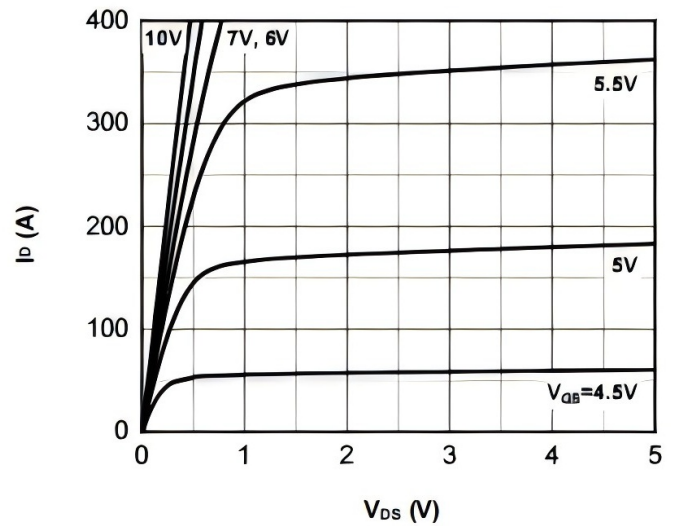


Fig.3 Normalized on-resistance vs drain current

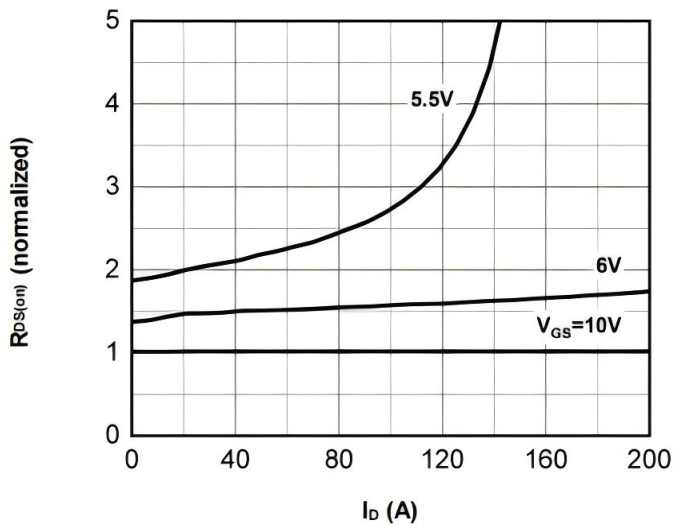


Fig.4 Typ. on-resistance vs gate-source voltage

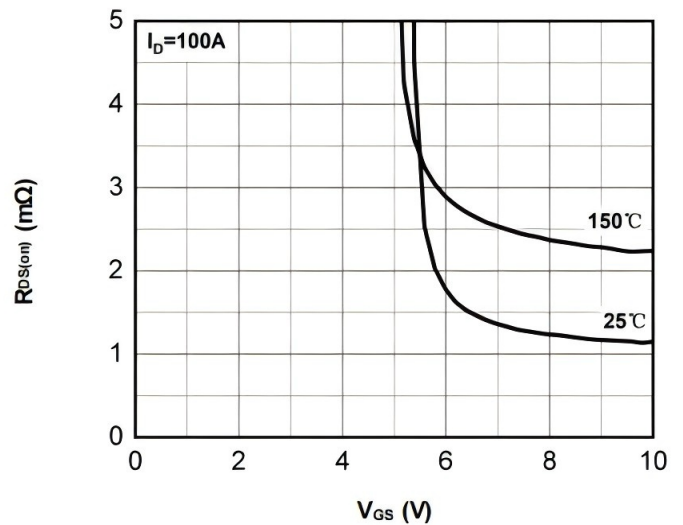


Fig.5 Normalized on-resistance vs junction temperature

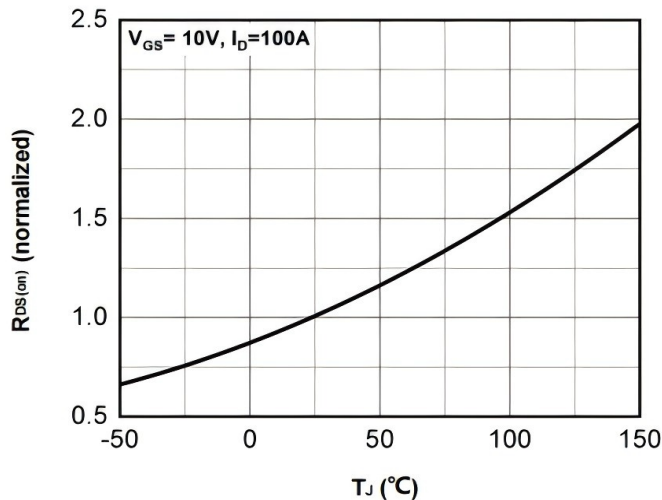


Fig.6 Typ. gate charge

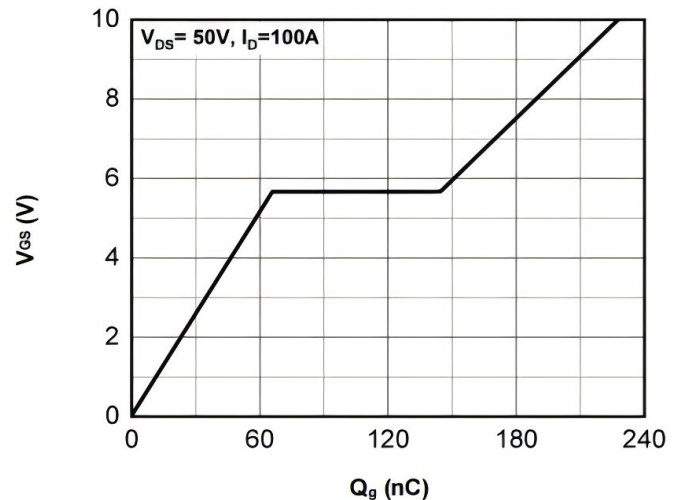


Fig.7 Typ. forward characteristics of body diode

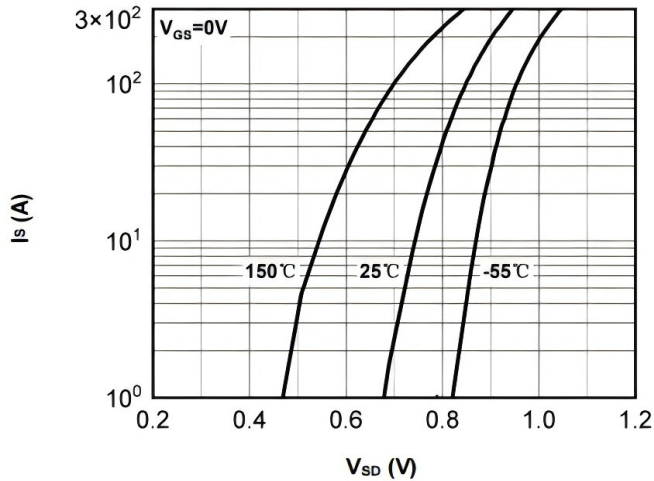


Fig.8 Safe operating area

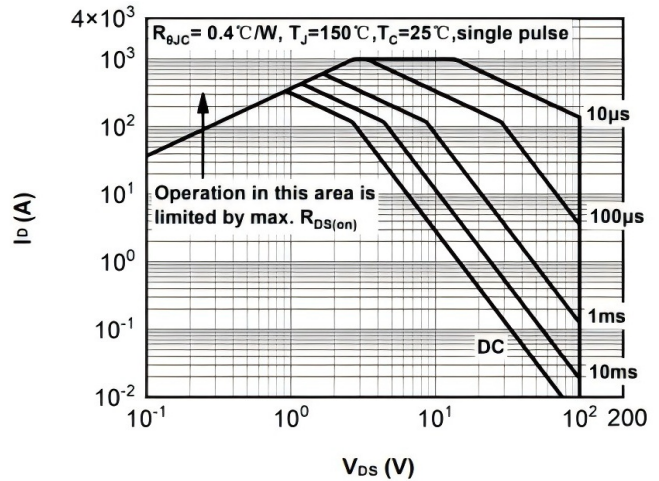


Fig.9 Typ. Capacitance

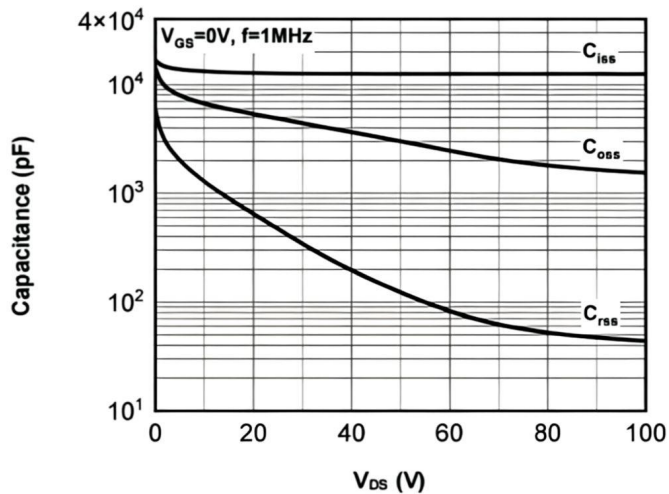


Fig.10 Single pulse maximum power dissipation

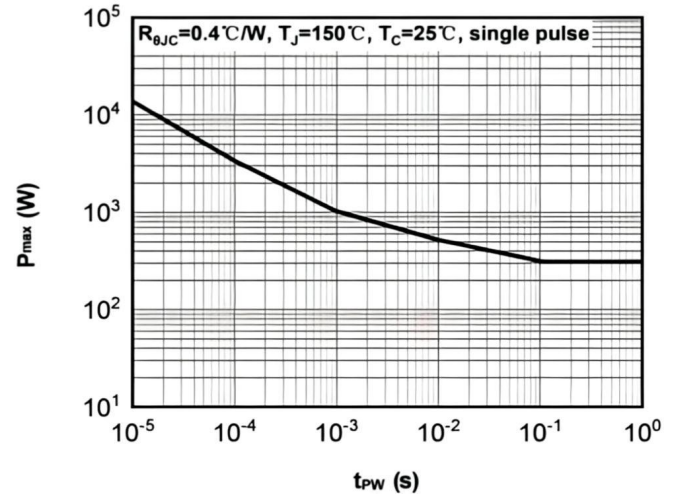


Fig.11 Max. power dissipation vs case temperature

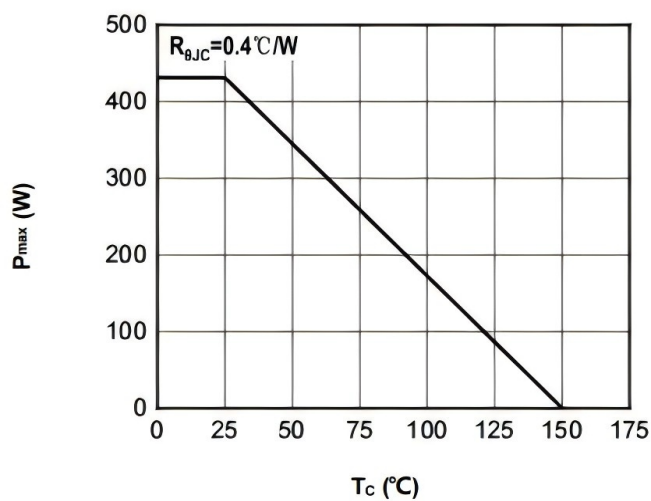


Fig.12 Max. continuous drain current vs case temperature

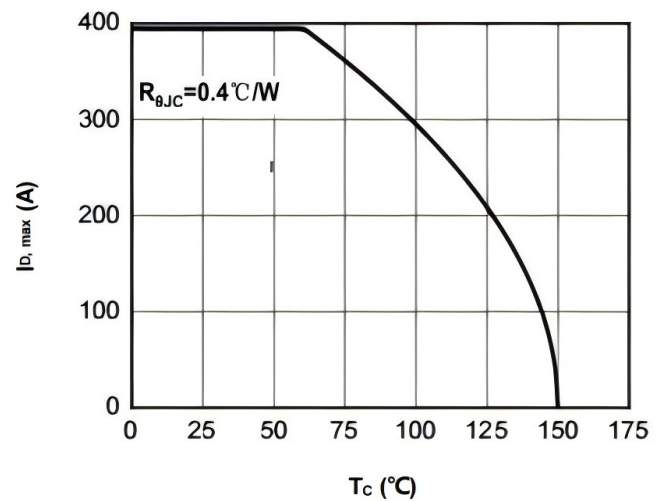


Fig.13 Normalized $V_{(BR)DSS}$ vs junction temperature

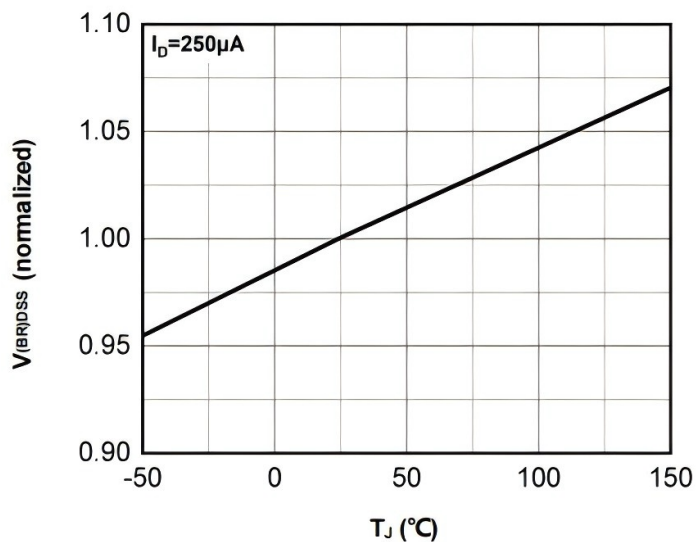


Fig.14 Normalized $V_{GS(th)}$ vs junction temperature

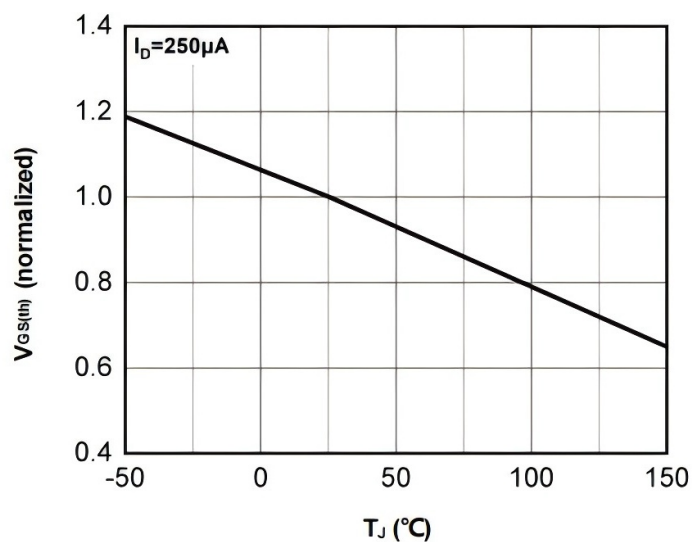
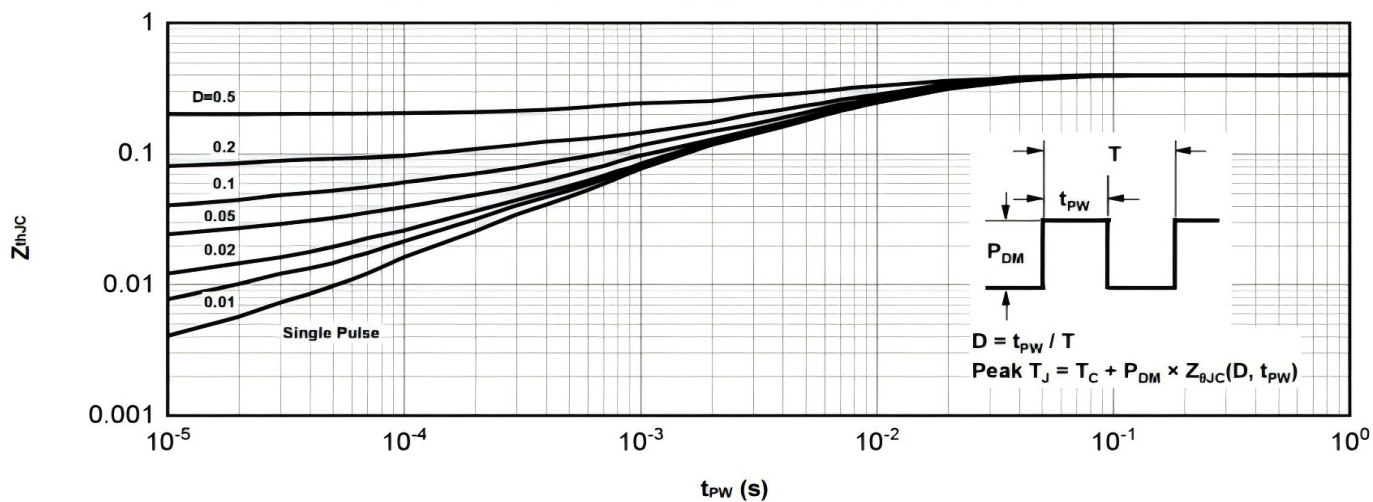
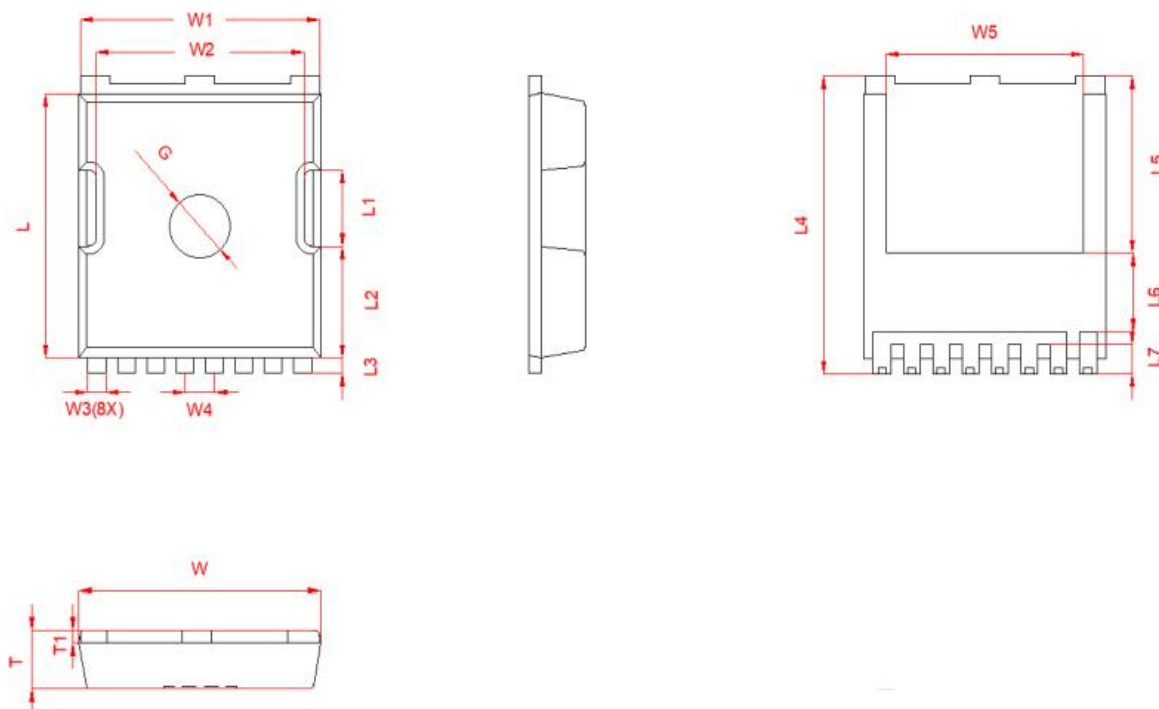


Fig.15 Transient thermal impedance from junction to case



Package Outline Dimensions (Units: mm)

TOLL



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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