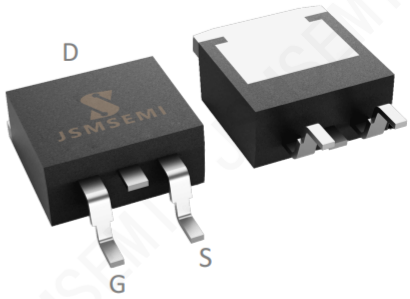
Product Summary

- V_{DS} 100V
- I_D 80A
- $R_{DS(ON)}$(at V_{GS}=10V) ＜15mΩ
- 100% EAS Tested
- 100% ▽V_{DS} Tested

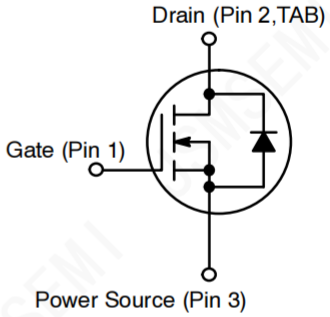


General Description

- Trench Power MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Power switching application
- Uninterruptible power supply
- DC-DC convertor
- Motor drivers



Absolute Maximum Ratings (T_A=25ºC,unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25ºC[Note1]	I_D	80	A
	T_C=100ºC		60	A
	T_A=25ºC[Note4]		17	A
Pulsed Drain Current[Note2]		I_D,pulse	600	A
Avalanche energy,single pulse[Note3]		E_{AS}	110	mJ
Power Dissipation	T_C=25ºC	P_D	256	W
	T_A=25ºC[Note4]		3.1	W
Operating and Storage Temperature Range		T_J,T_{SGT}	-55 to150	ºC

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	-	-	0.8	°C/W
Thermal Resistance,Junction-to-Ambitent[Note4]	$R_{\theta JA}$	-	-	40	°C/W

Ordering Information

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship, Quantity	Green
IRF8010STRLPBF-JSM	TO-263	F8010S	-55 to 150°C	1	T&R,800	Rohs

Electrical Characteristics (T_J=25°C,unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V,I_D=250uA	100	-	-	V
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V	-	-	±100	nA
ZeroGate Voltage Drain Current	I_{DSS}	V_{DS}=100V,V_{GS}=0V	-	-	1	uA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=250uA	2.2	3.0	3.8	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V,I_D=50A	-	12.0	15.0	mΩ
Gate Resistance	Rg	f=1MHz	-	1.5	-	Ω
Forward Transconductance[Note5]	gfs	V_{DS}=5V,I_D=50A	-	90	-	S
Dynamic Characteristics[Note5]						
Input Capacitance	Ciss	V_{GS}=0V V_{DS}=50V f=1MHz	-	4646	-	pF
Output Capacitance	Coss		-	580	-	pF
Reverse Transfer Capacitance	Crss		-	30	-	pF
Turn-on Delay Time	td(on)	V_{DS}=50V I_D=50A V_{GS}=10V R_G=6Ω	-	53	-	ns
Rise Time	tr		-	88	-	ns
Turn-off Delay Time	td(off)		-	85	-	ns
Fall Time	tf		-	22	-	ns
Gate Charge Characteristics						
Total Gate Charge	Qg	V_{DS}=50V V_{GS}=10V I_D=50A	-	69	-	nC
Gate to Source Charge	Qgs		-	22	-	nC
Gate to Drain Charge	Qgd		-	17	-	nC
Reverse Diode Characteristics[Note5]						
Drain-Source Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_F=50A	-	0.92	1.2	V
Reverse recovery time	trr	I_F=50A,V_{DS}=50V di/dt=100A/μs	-	72	-	ns
Reverse recovery charge	Qrr		-	138	-	nC

Notes:

1.Package limited

2.Pulse width limited by maximum junction temperature

3.V_{DS}=50V,V_{GS}=10V,L=0.1mH

4.$R_{\theta JA}$ is determined with the device mounted on a1 in ^{2} pad 2 oz copper pad on a1.5x1.5 in.board of FR-4 material

5.Guaranteed by design,not subject to production testing

Electrical Characteristics Diagrams

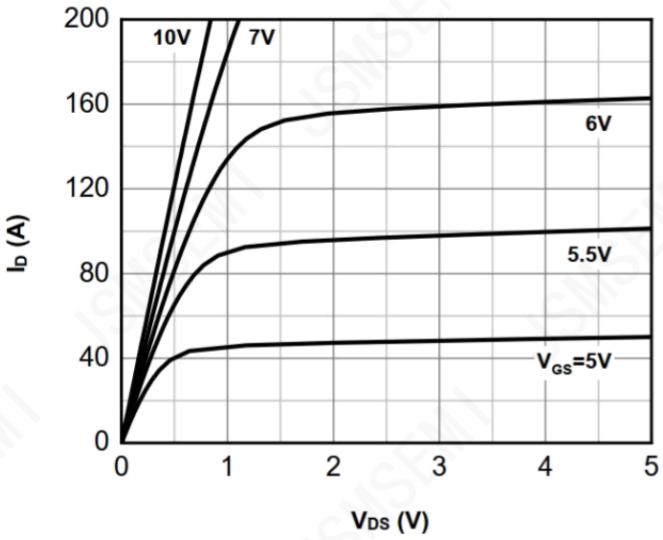


Figure 1: Typ. Output Characteristics

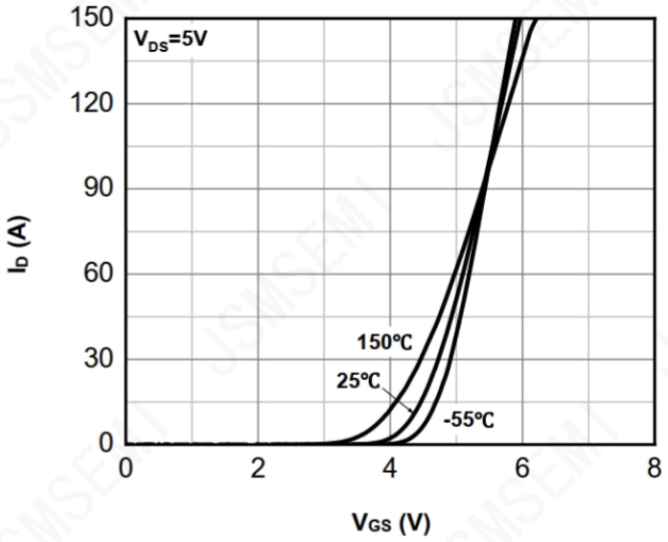


Figure 2: Typ. Transfer Characteristics

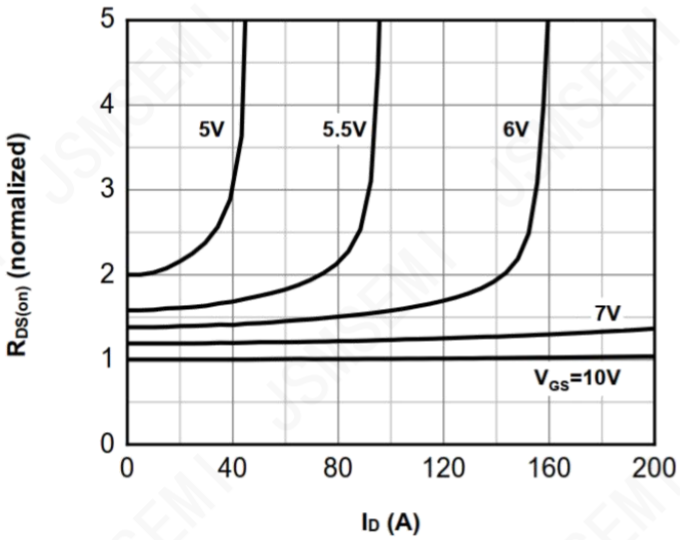


Figure 3: Normalized On-Resistance vs. Drain Current

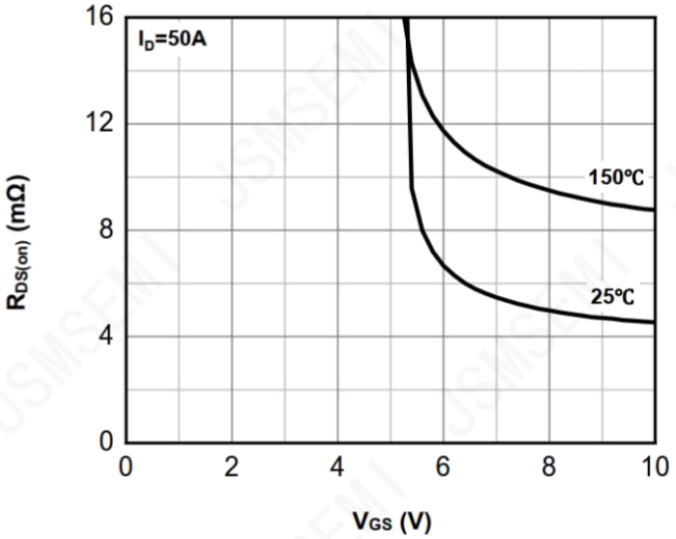


Figure 4: Typ. On-Resistance vs. Gate-source Voltage

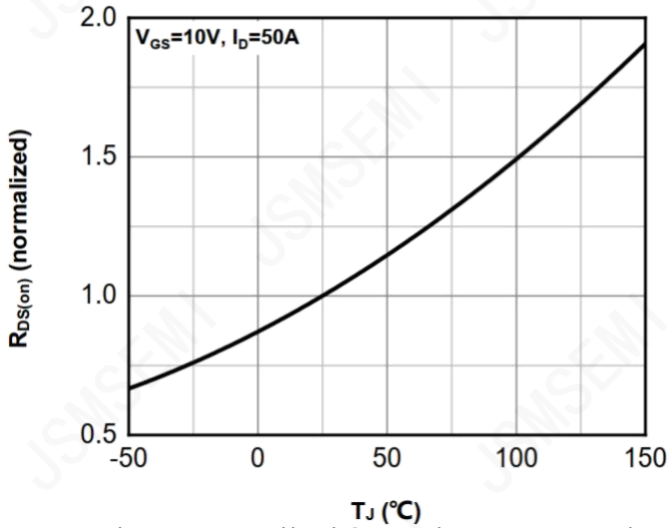


Figure5:Normalized On-Resistance vs. Junction Temperature

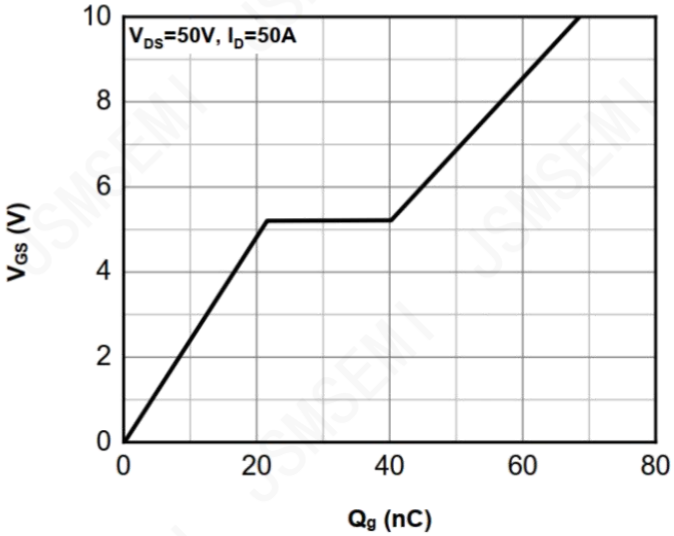


Figure 6: Typ.Gate Charge

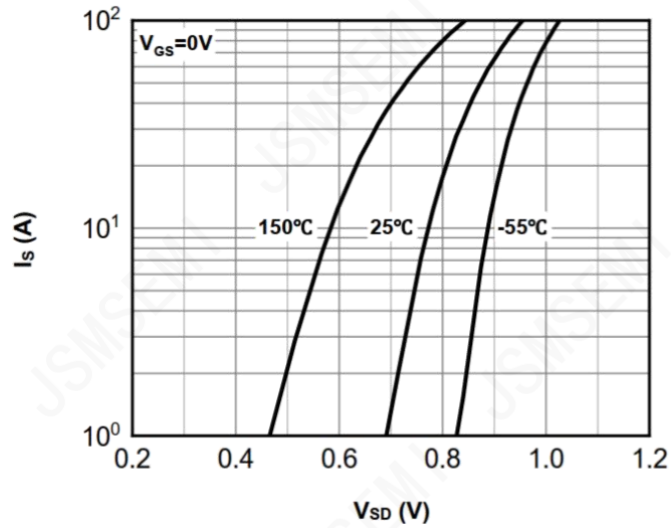


Figure 7:Typ. Forward Characteristics of Body Diode

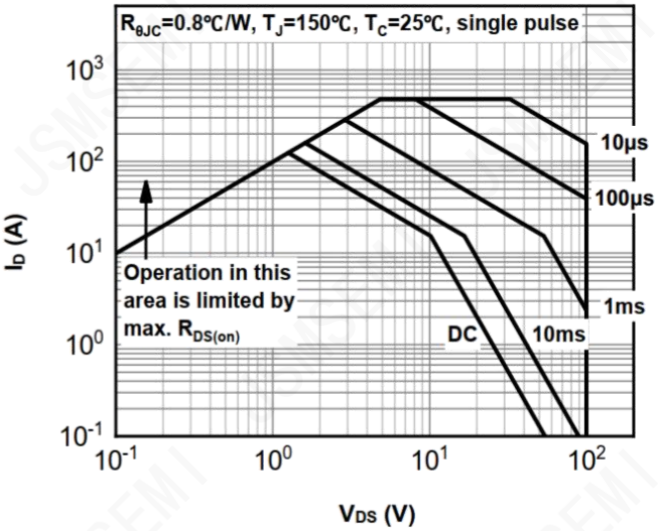


Figure 8: Safe Operating Area

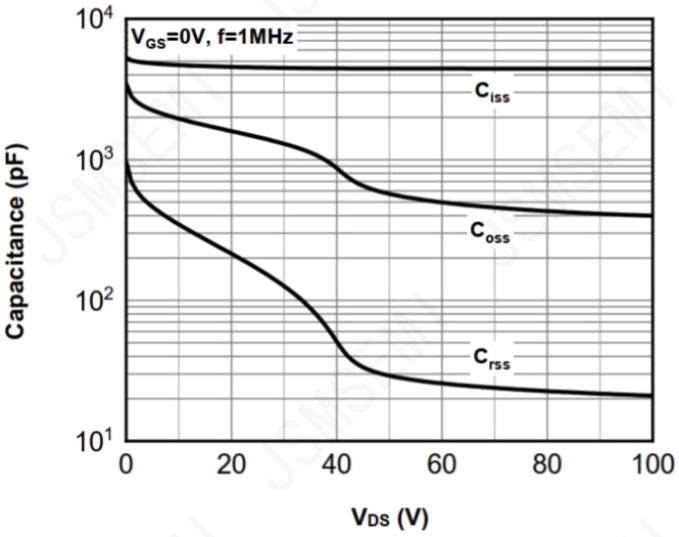


Figure 9: Typ. Capacitances

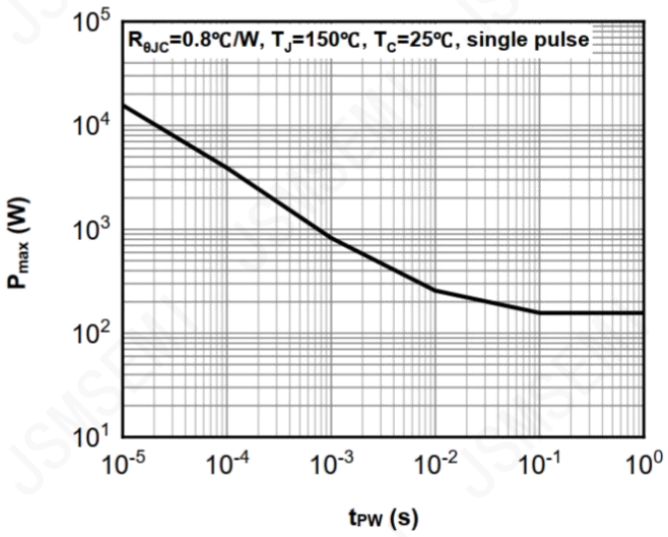


Figure 10: Single Pulse Maximum Power Dissipation

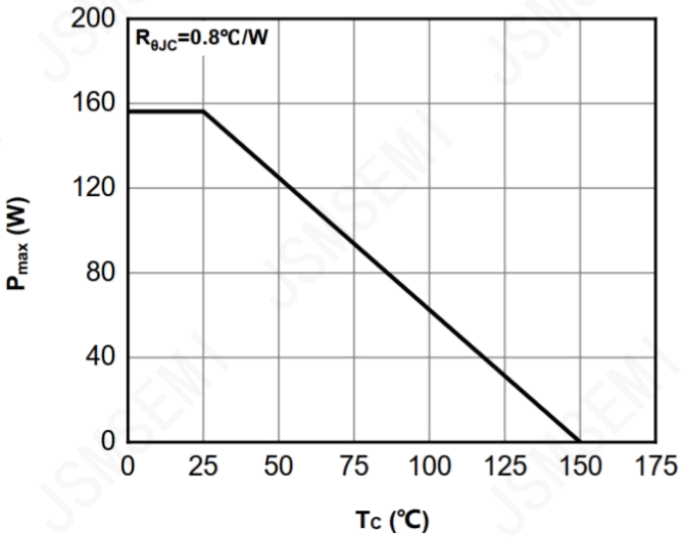


Figure 11: Max. Power Dissipation vs. Case Temperture

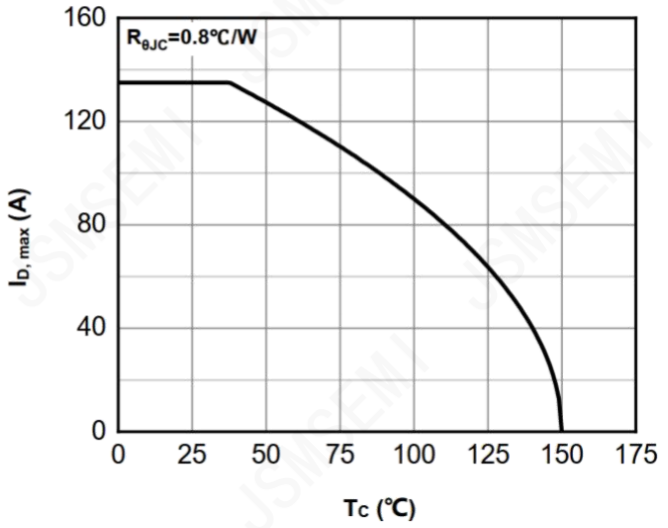


Figure 12: Max.Continuous Drain Current vs. Case Temperature

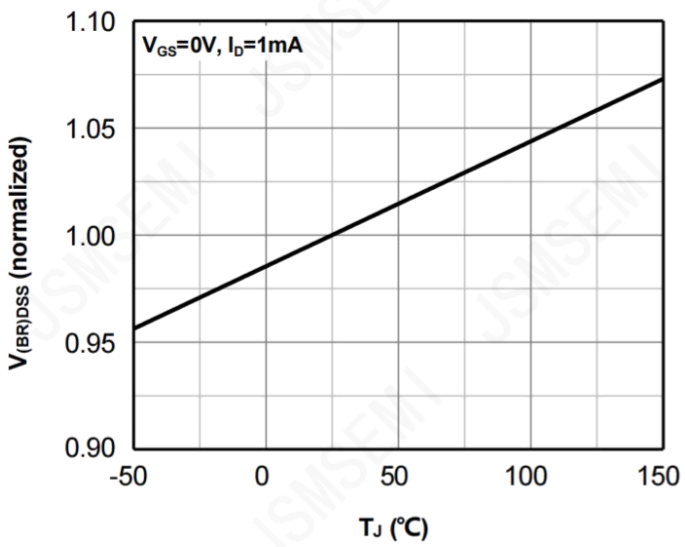


Figure 13: Normalized $V_{(BR)DSS}$ vs. Junction Temperature

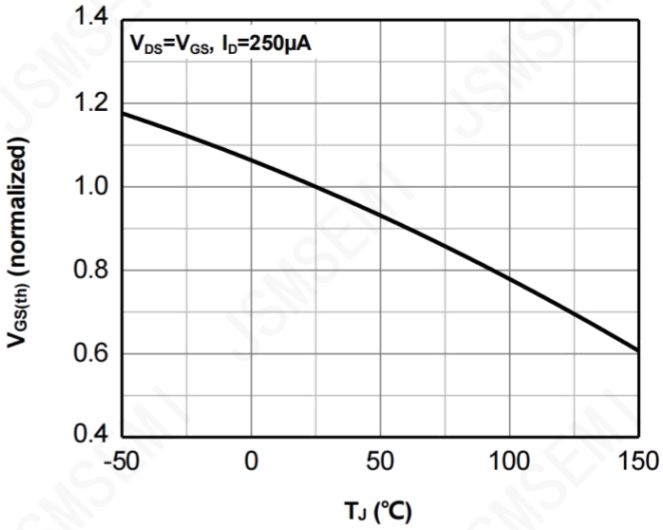


Figure 14: Normalized $V_{GS(th)}$ vs. Junction Temperature

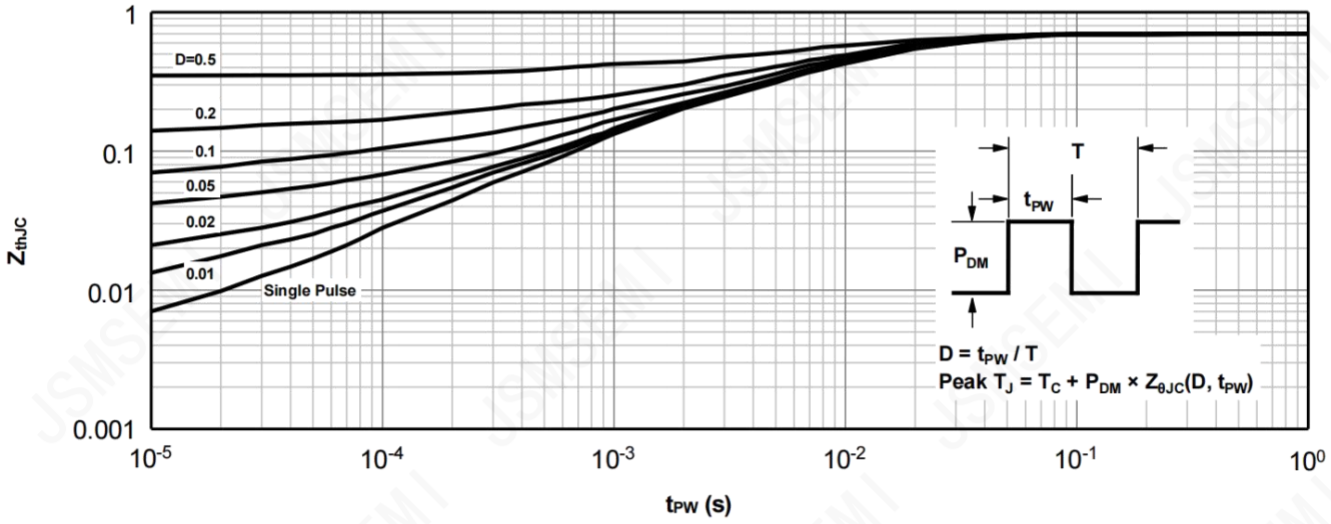
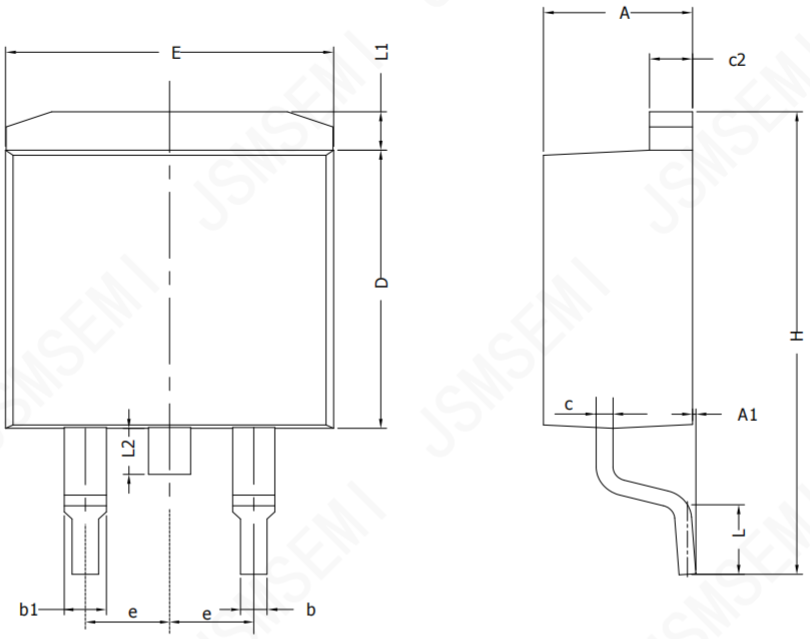


Figure 15: Normalized Transient Thermal Impedance Form Junction To Case

Package Information

TO-263-2



SYMBOL	MIN	NOM	MAX
A	4.30	4.57	4.72
A1	0	0.10	0.25
b	0.71	0.81	0.91
c	0.30	---	0.60
c2	1.17	1.27	1.37
D	8.50	---	9.35
E	9.80	---	10.45
e		2.54BSC	
H	14.70	---	15.75
L	2.00	2.30	2.74
L1	1.12	1.27	1.42
L2	---	---	1.75

Revision History

Rev.	Change	Date
V1.0	Initial version	6/27/2021

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