

Product Summary

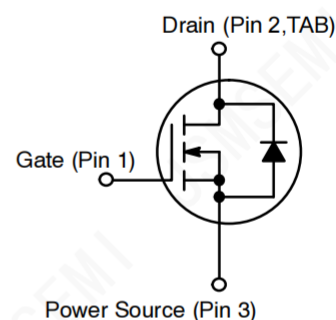
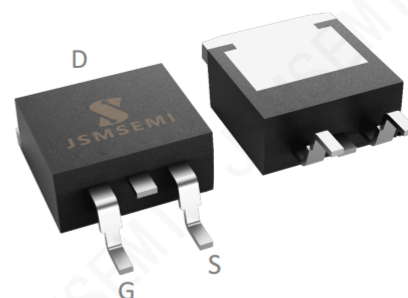
- V_{DS} 100V
- I_D 85A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) $<8.0m\Omega$
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

- Split gate trench 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 ($T_A=25^\circ C$, unless otherwise specified)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^\circ C$ ^{Note1}	I_D	85	A
	$T_C=100^\circ C$		60	A
	$T_A=25^\circ C$ ^{Note4}		17	A
Pulsed Drain Current ^{Note2}		$I_{D,pulse}$	600	A
Avalanche energy, single pulse ^{Note3}		EAS	110	mJ
Power Dissipation	$T_C=25^\circ C$	P_D	256	W
	$T_A=25^\circ C$ ^{Note4}		3.1	W
Operating and Storage Temperature Range		T_J, T_{SGT}	-55 to 150	$^\circ C$

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	-	0.8	$^\circ C/W$
Thermal Resistance, Junction-to-Ambient ^{Note4}	$R_{\theta JA}$	-	-	40	$^\circ C/W$

Ordering Information

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship, Quantity	Green
IPB083N10N3GATMA1-JSM	TO-263	053N10BGH	-55 to 150 $^\circ C$	1	T&R, 800	RoHS

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Statistic Characteristics						
Drain-Source Breakdown Voltage	BVDSS	VGS=0V, ID=250uA	100	-	-	V
Gate-Body Leakage Current	IGSS	VGS=±20V, VDS=0V	-	-	±100	nA
ZeroGate Voltage Drain Current	IDSS	VDS=100V, VGS=0V	-	-	1	uA
Gate Threshold Voltage	VGS(th)	VDS=VGS, ID=250uA	2.2	3.0	3.8	V
Static Drain-Source On-Resistance	RDS(ON)	VGS=10V, ID=50A	-	7.0	8.0	mΩ
Gate Resistance	Rg	f=1MHz	-	1.5	-	Ω
Forward Transconductance ^{Note5}	gfs	VDS=5V, ID=50A	-	90	-	S
Dynamic Characteristics ^{Note5}						
Input Capacitance	Ciss	VGS=0V VDS=50V f=1MHz	-	4646	-	pF
Output Capacitance	Coss		-	580	-	pF
Reverse Transfer Capacitance	Crss		-	30	-	pF
Turn-on Delay Time	td(on)	VDS=50V ID=50A VGS=10V RG=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	VDS=50V VGS=10V ID=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	VSD	VGS=0V, IF=50A	-	0.92	1.2	V
Reverse recovery time	trr	IF=50A, VDS=50V	-	72	-	ns
Reverse recovery charge	Qrr	di/dt=100A/μs	-	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 a 1 in² pad 2 oz copper pad on a 1.5x1.5 in. board of FR-4 material
- 5.Guaranteed by design, not subject to production testing

Electrical Characteristics Diagrams

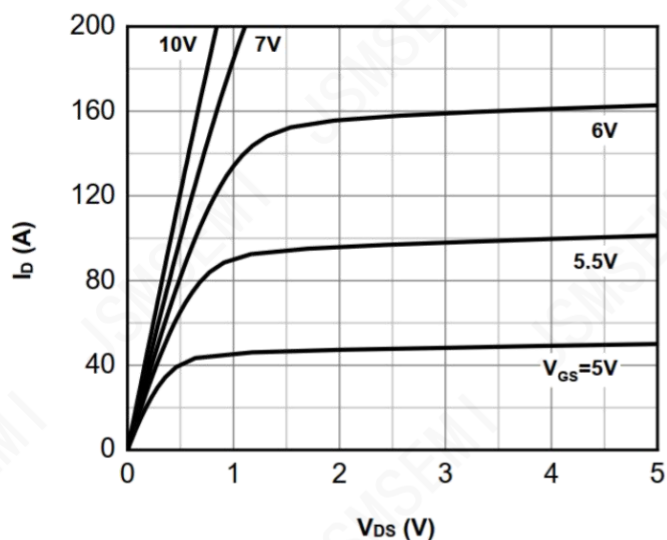


Figure 1: Typ. Output Characteristics

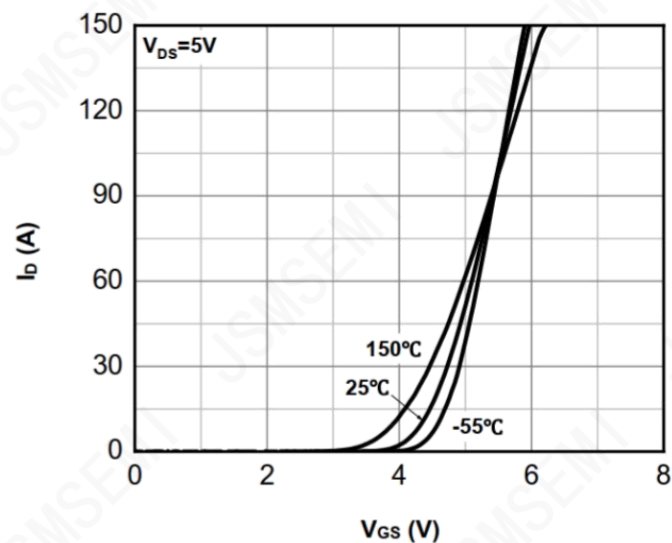


Figure 2: Typ. Transfer Characteristics

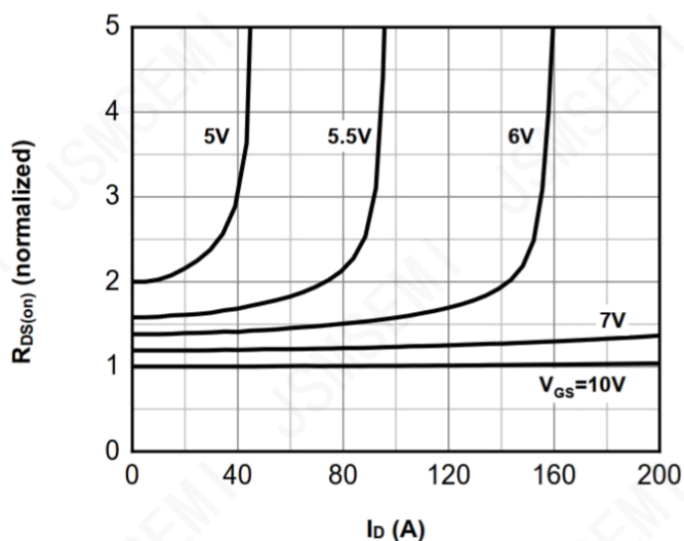


Figure 3: Normalized On-Resistance vs. Drain Current

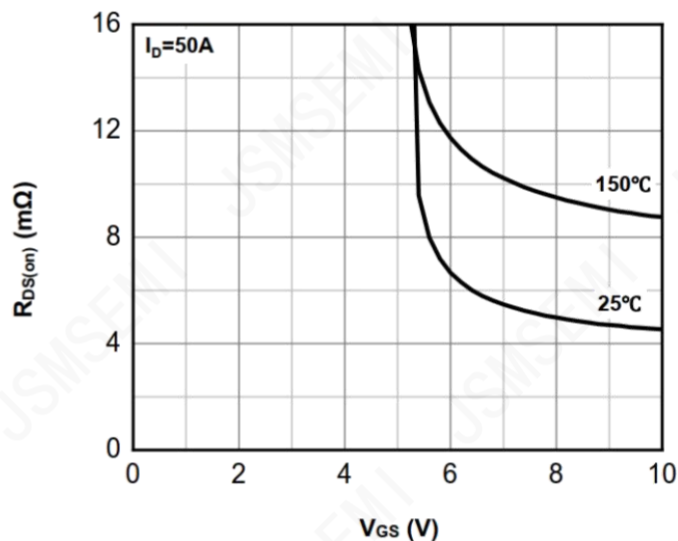


Figure 4: Typ. On-Resistance vs. Gate-source Voltage

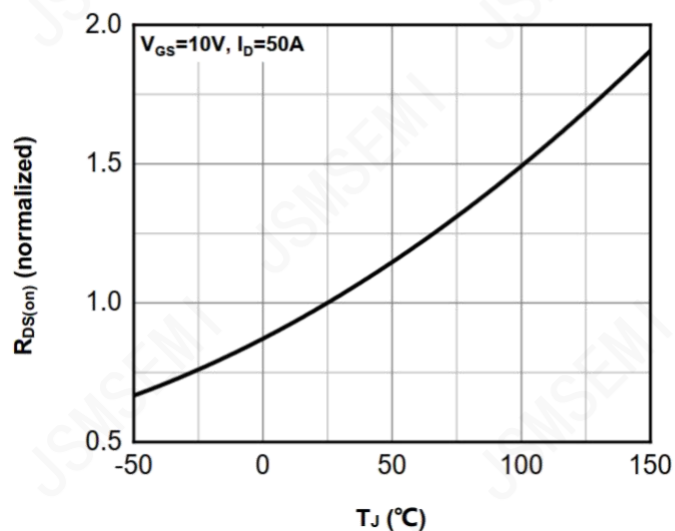


Figure 5: Normalized On-Resistance vs. Junction Temperature

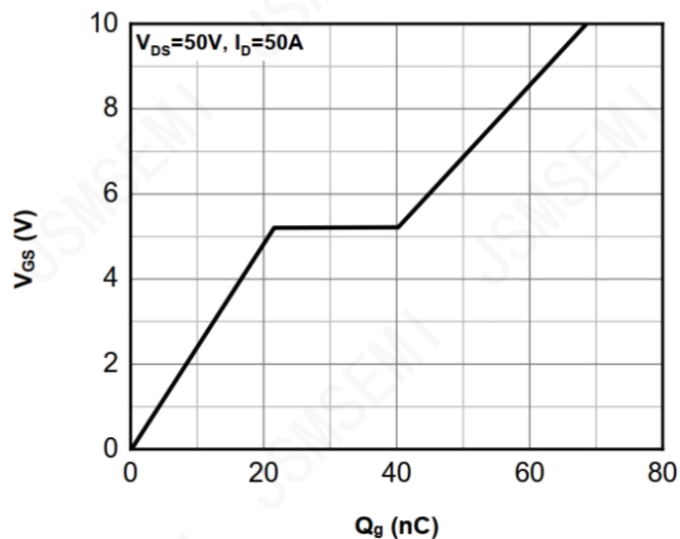


Figure 6: Typ. Gate Charge

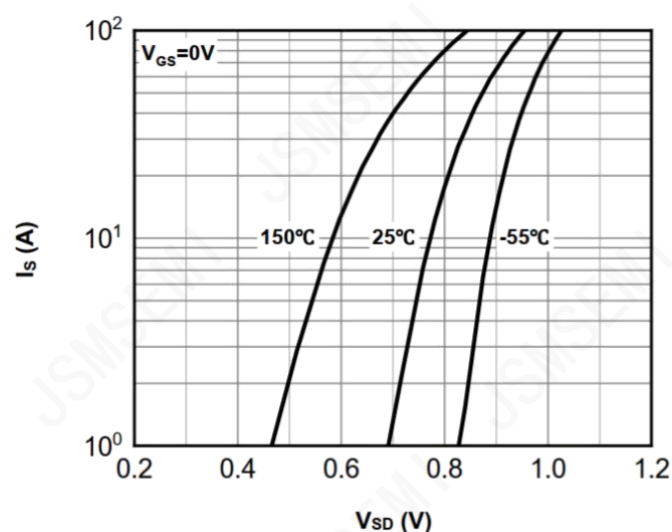


Figure 7: Typ. Forward Characteristics of Body Diode

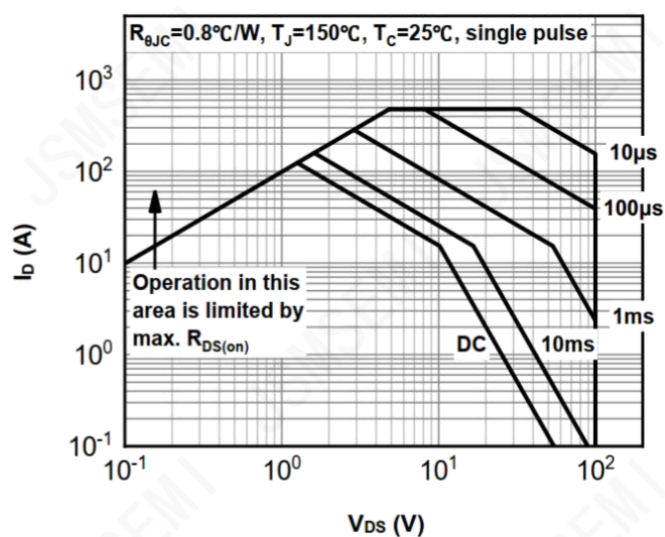


Figure 8: Safe Operating Area

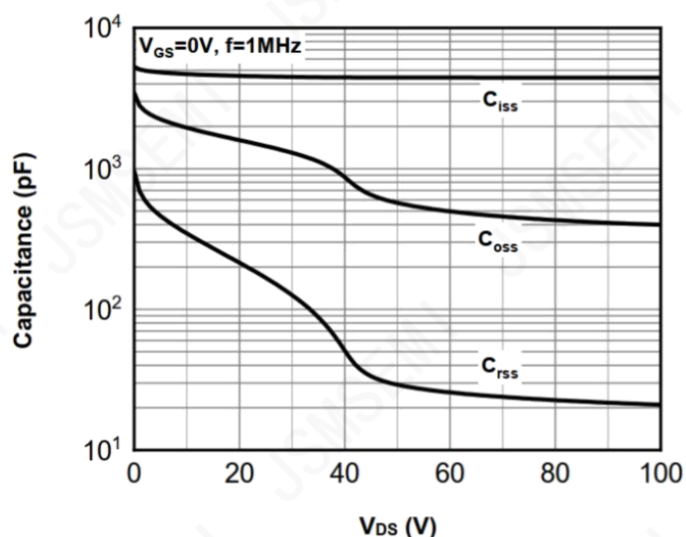


Figure 9: Typ. Capacitances

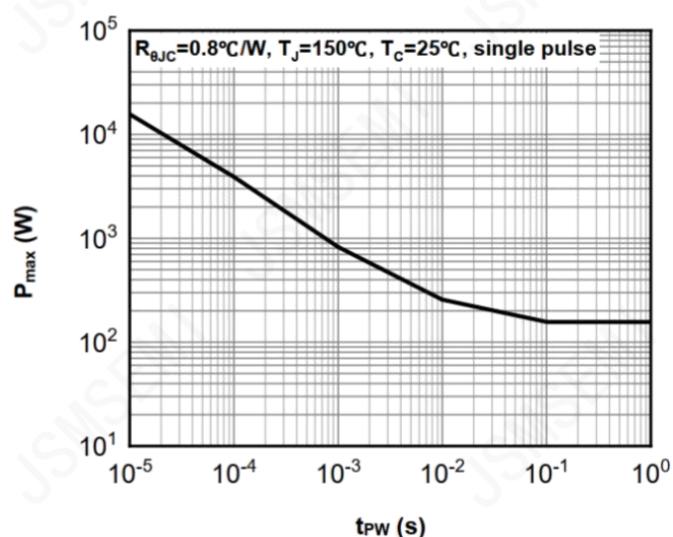


Figure 10: Single Pulse Maximum Power Dissipation

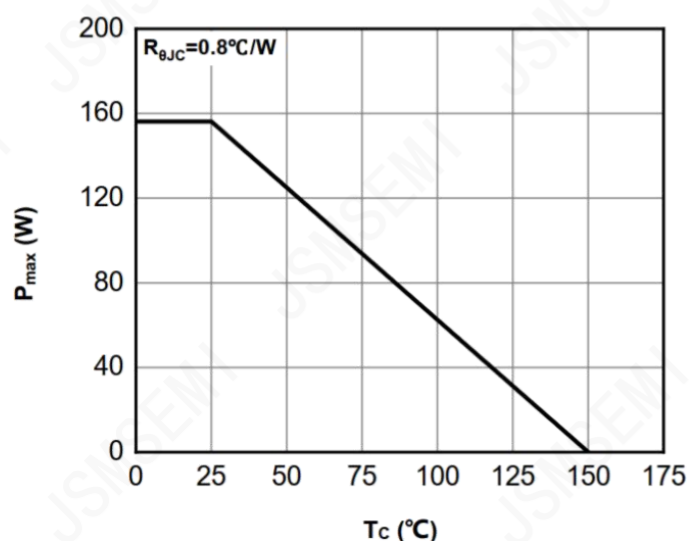


Figure 11: Max. Power Dissipation vs. Case Temperature

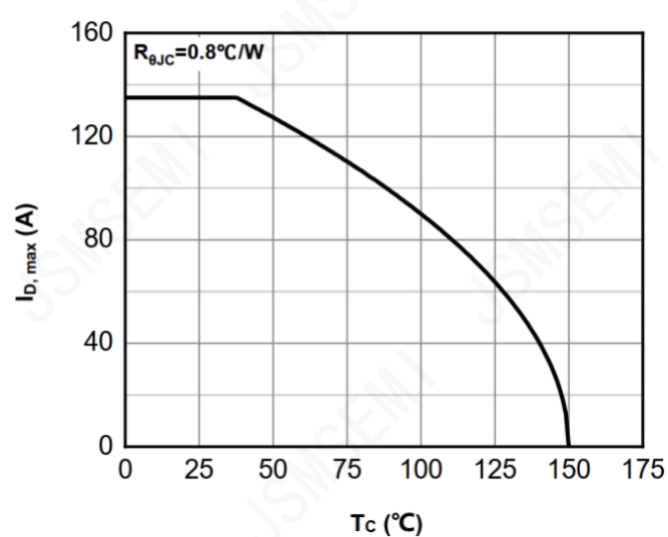


Figure 12: Max. Continuous Drain Current vs. Case Temperature

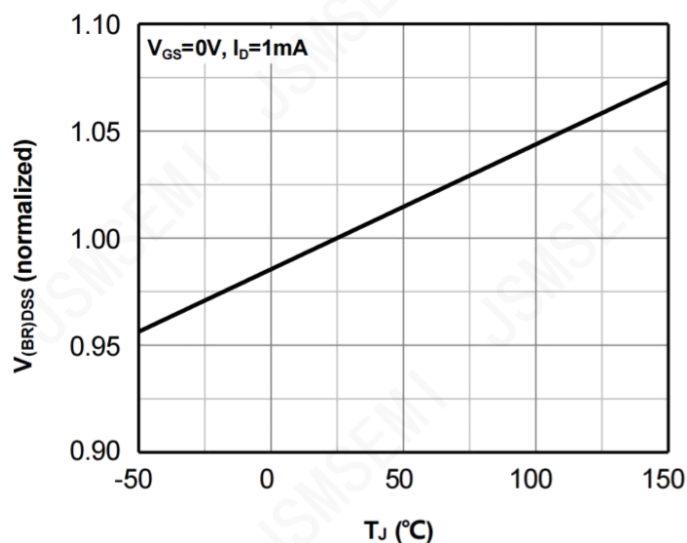


Figure 13: Normalized $V_{(BR)DSS}$ vs. Junction Temperature

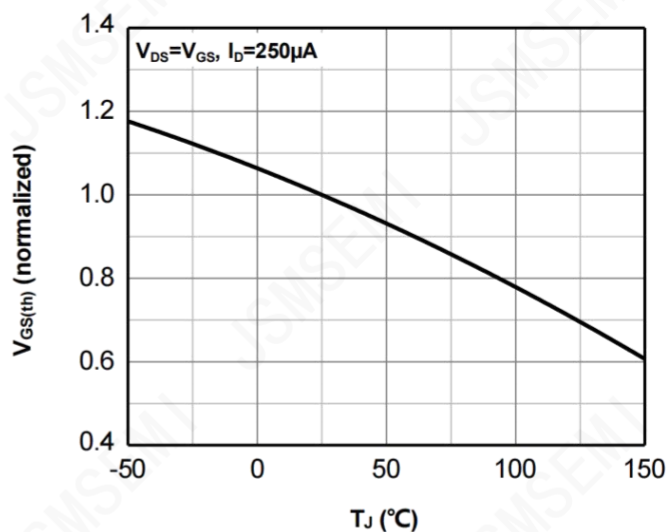


Figure 14: Normalized $V_{GS(th)}$ vs. Junction Temperature

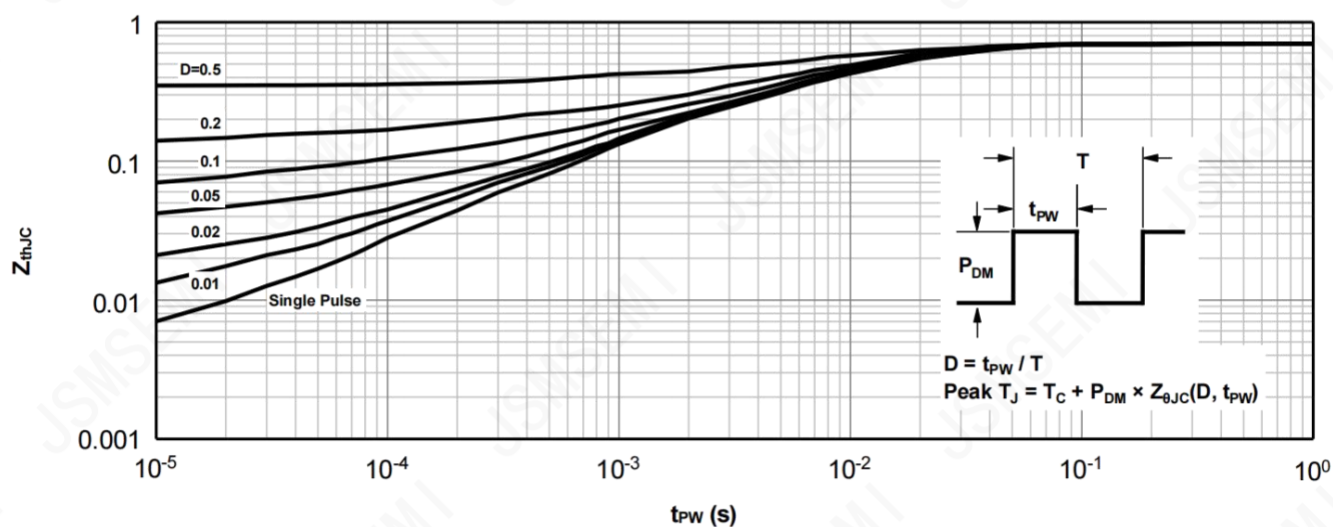
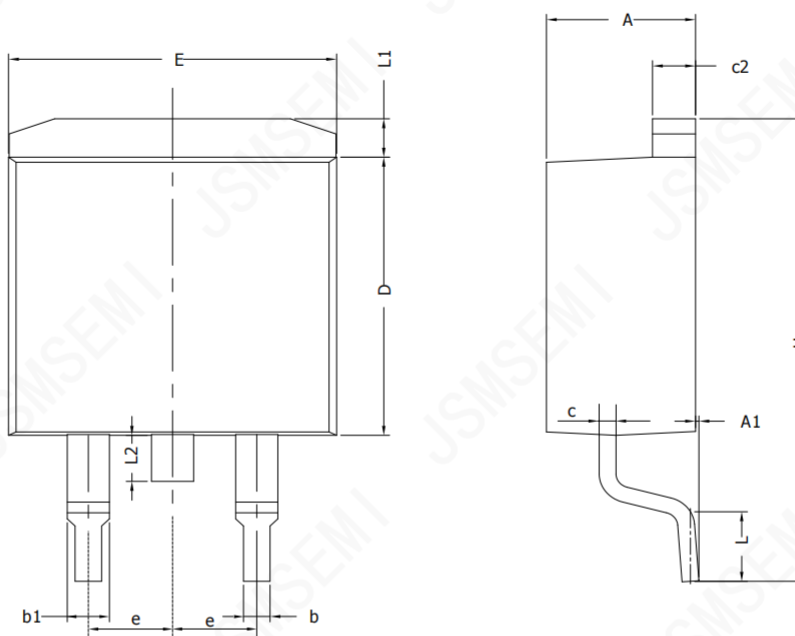


Figure 15: Normalized Transient Thermal Impedance Form Junction To Case

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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