N-Channel Enhancement Mode MOSFET

GENERAL DESCRIPTION

The PW2320 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application..

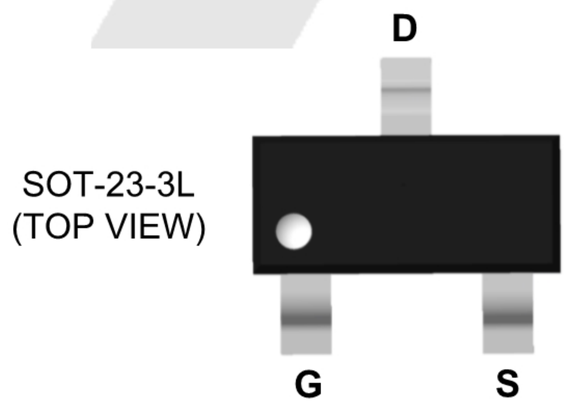
FEATURES

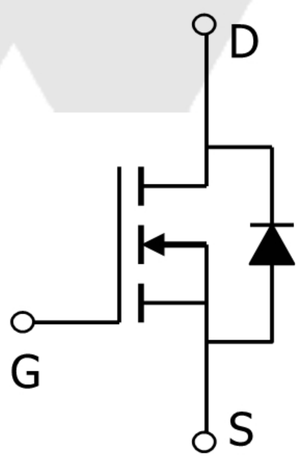
VDS = 20V ID =8A

RDS(ON) < 12mΩ @ VGS=4.5V

Available in a 3-Pin SOT23-3 Package

Products





Absolute Maximum Ratings (TA=25℃unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	ID	8	A
Continuous Drain Current	ID@TA=100℃	4.5	A
Pulsed Drain Current	I_{DM}	75	A
Maximum Power Dissipation	P_D @TA=25℃	12	W
Storage Temperature Range	T_{STG}	-55 To 175	℃
Operating Junction Temperature Range	T_J	-55 To 175	℃
Single pulse avalanche energy	EAS	1	mJ
Thermal Resistance Junction-Case	$R_{\theta JC}$	3.8	℃/W

ELECTRICAL CHARACTERISTICS

(TA = 25°C, unless otherwise noted.)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	VGS=0V ID=250μA	20	22		V
Zero Gate Voltage Drain Current	I_{DSS}	VDS=20V,VGS=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	VGS=±12V,VDS=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS=VGS,ID=250μA	0.5	0.65	1.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	VGS=4.5V, ID=6A		8.5	12	mΩ
Drain-Source On-State Resistance	$R_{DS(ON)}$	VGS=2.5V, ID=3A		10	15	mΩ
Forward Transconductance	g_{FS}	VDS=5V,ID=20A	10			S
Total Gate Charge	Qg	VGS=10V,VDS=10V,ID=20A		15		nC
Gate-Source Charge	Qgs			1.8		nC
Gate-Drain Charge	Qgd			2.8		nC
Turn-on Delay Time	td(on)	VGS=10V,VDS=10V RL=0. 5Ω,RGEN=3Ω		4.5		nS
Turn-on Rise Time	tr			9.2		nS
Turn-Off Delay Time	td(off)			18.7		nS
Turn-Off Fall Time	tf			3.3		nS
Diode Forward Voltage (Note 3)	VSD	VGS=0V,IS=25A			1.2	V
Diode Forward Current (Note 2)	IS				25	A
Reverse Recovery Time	trr	TJ = 25°C, IF = 20A di/dt = 100A/μs(Note3)		18		nS
Reverse Recovery Charge	Qrr			9.5		nC
Input Capacitance	Clss	VDS=10V,VGS=0V, F=1.0MHz		625		PF
Output Capacitance	Coss			162		PF
Reverse Transfer Capacitance	Crss			105		PF

Note :

1、 Repetitive Rating: Pulse width limited by maximum junction temperature.

2、 Surface Mounted on FR4 Board, t ≤ 10 sec.

3、 Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

4、 Guaranteed by design, not subject to production

Typical Characteristics

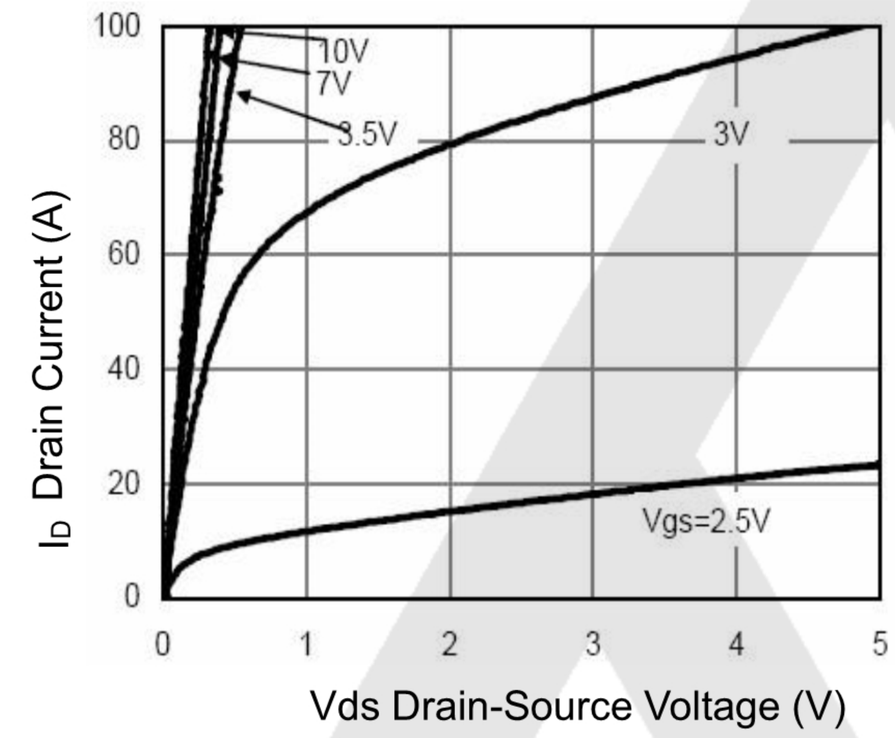


Fig.1 Typical Output Characteristics

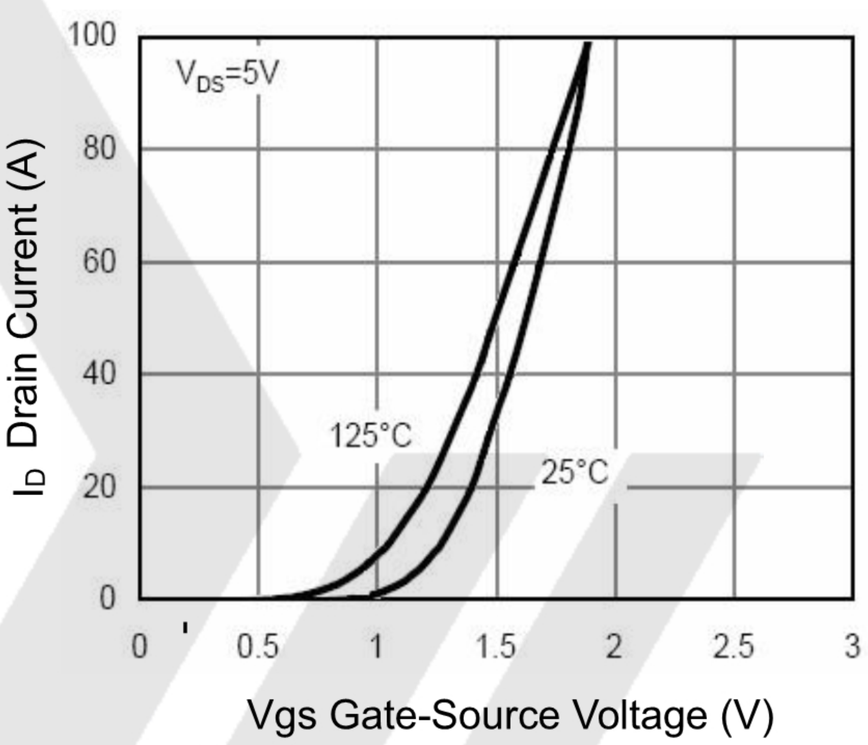


Fig.2 Transfer Characteristics

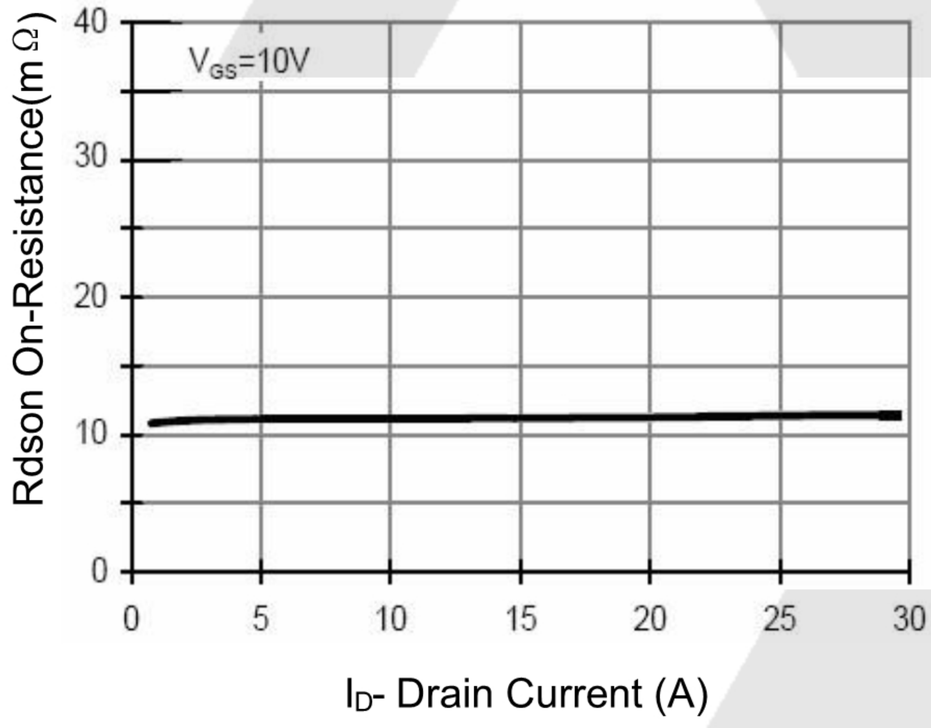


Fig.3 RDSON-Current

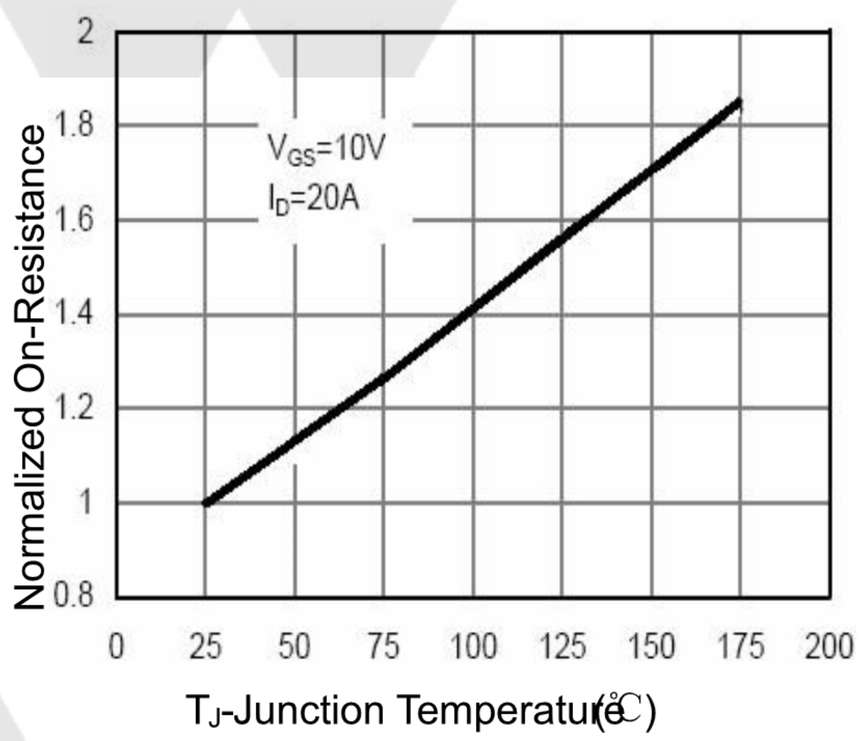


Fig.4 RDSON- Junction Temperature

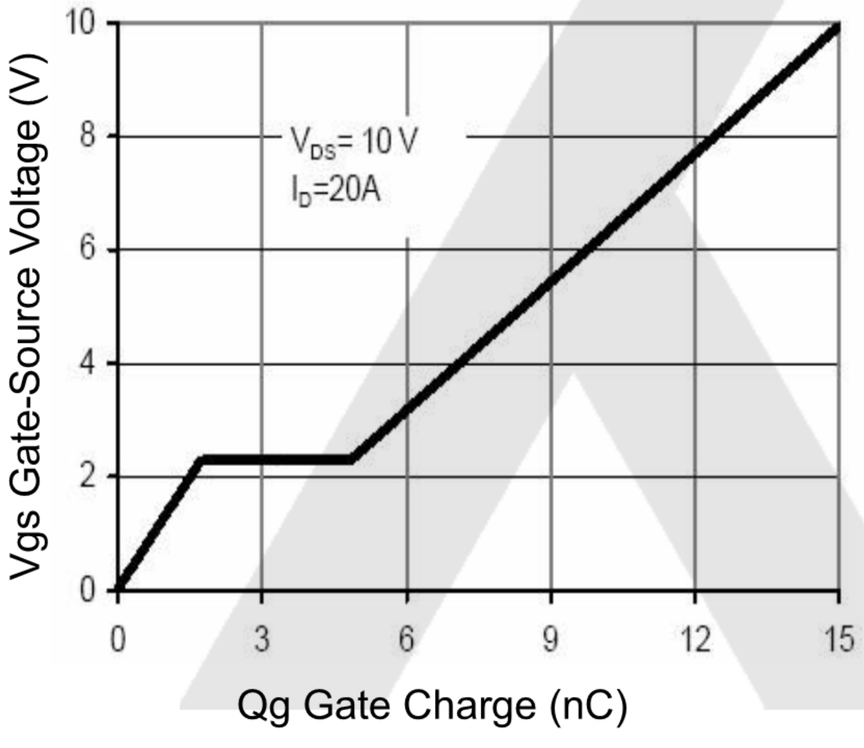


Fig.5 Gate-Charge

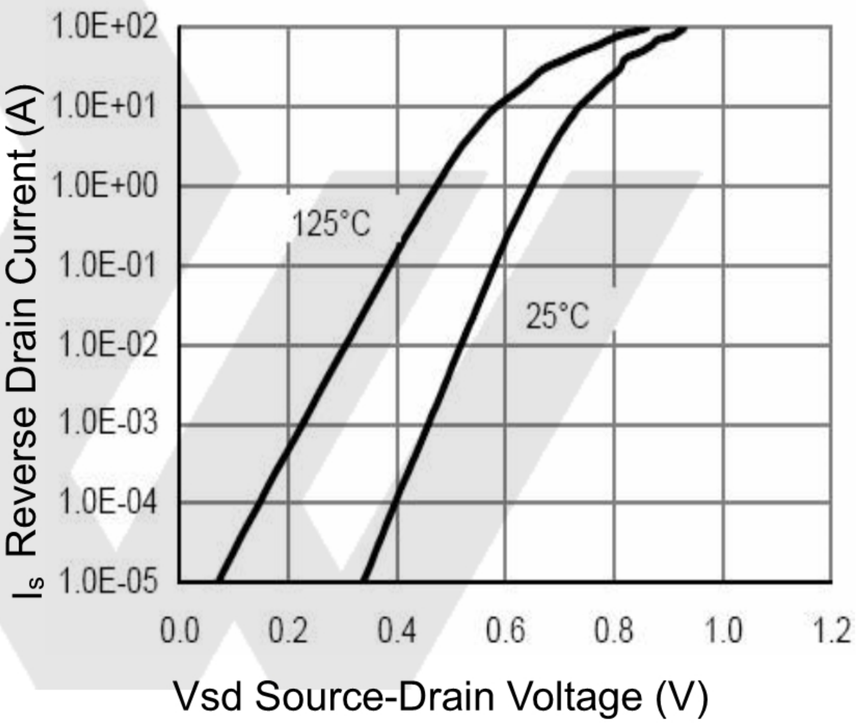


Fig.6 Source-Drain Diode Forward

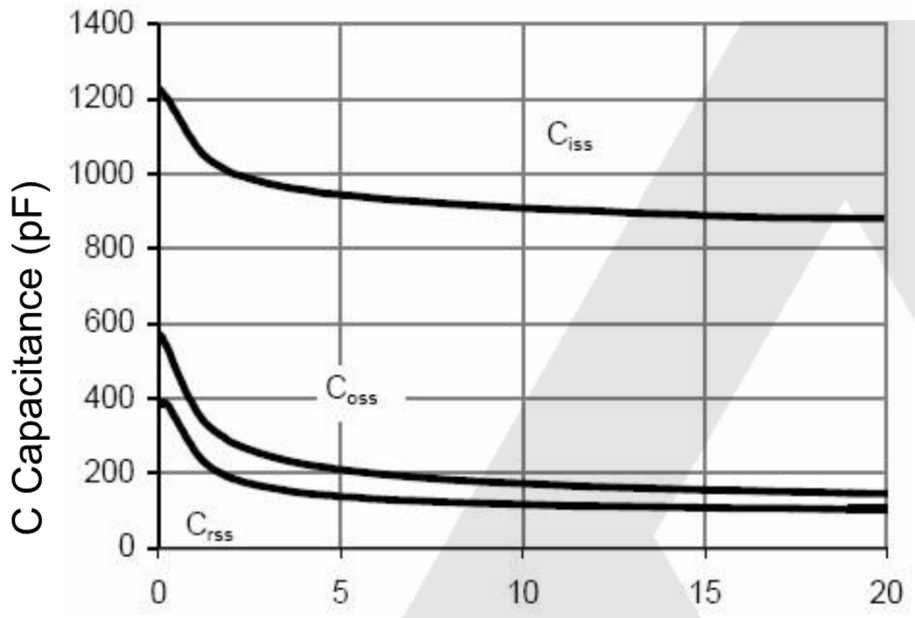


Fig.7 Capacitance vs Vds

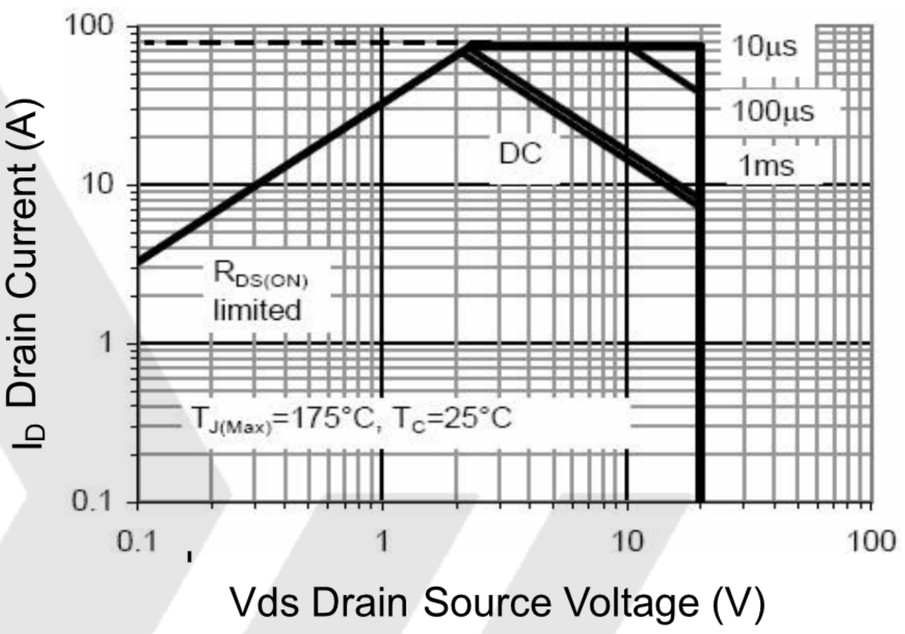


Fig.8 Safe Operating Area

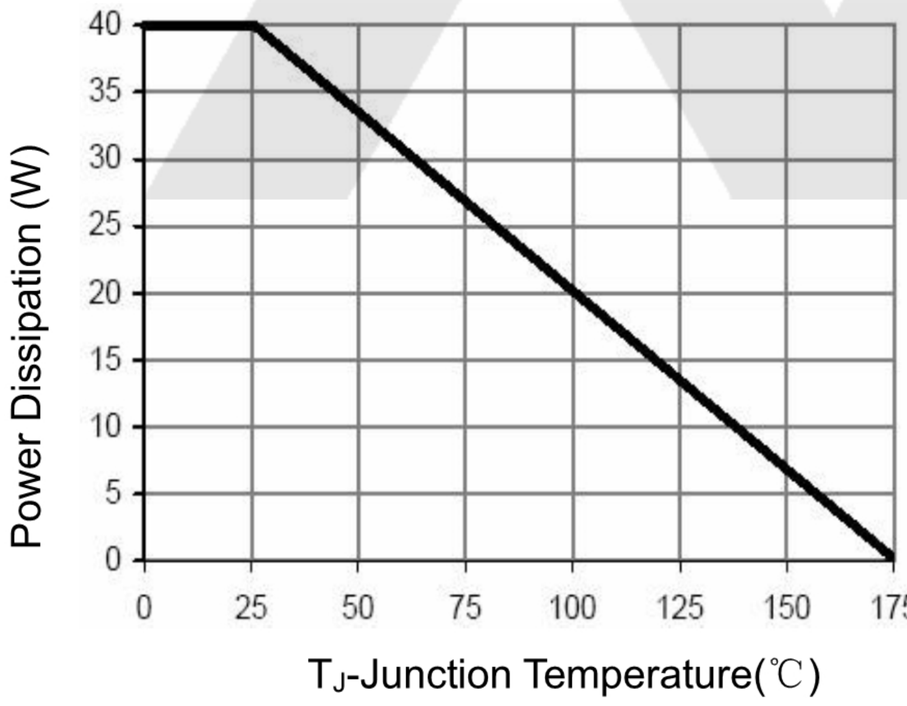


Fig.9 Power De-rating

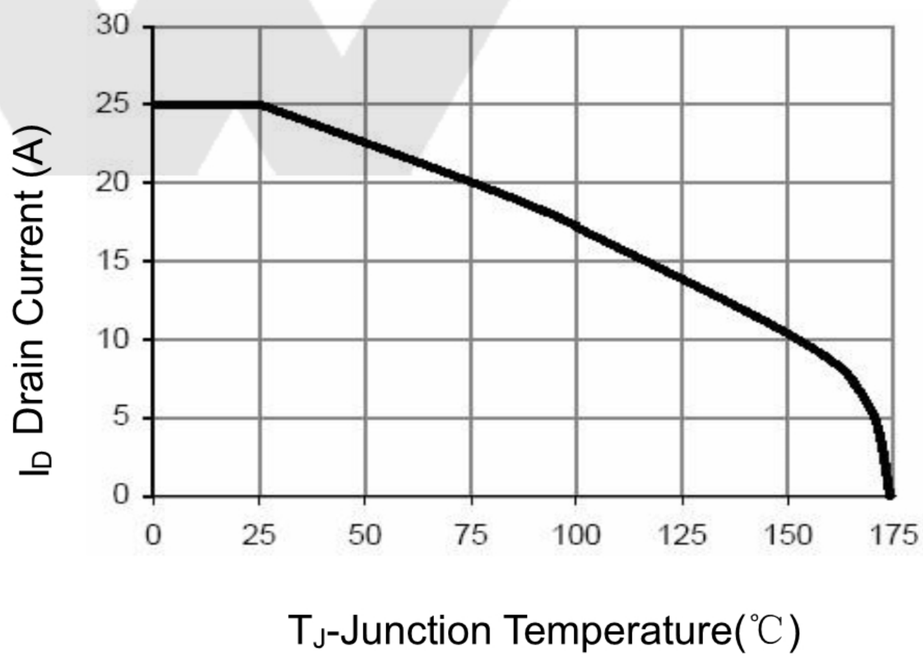


Fig.10 Current De rating

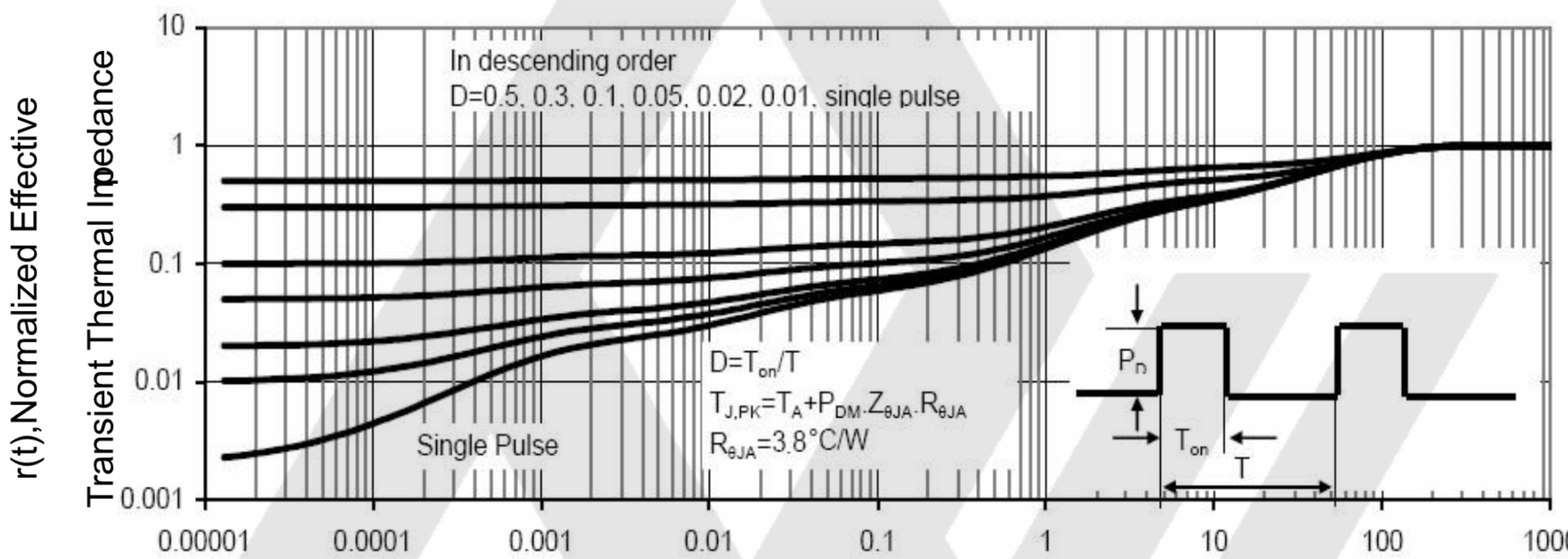
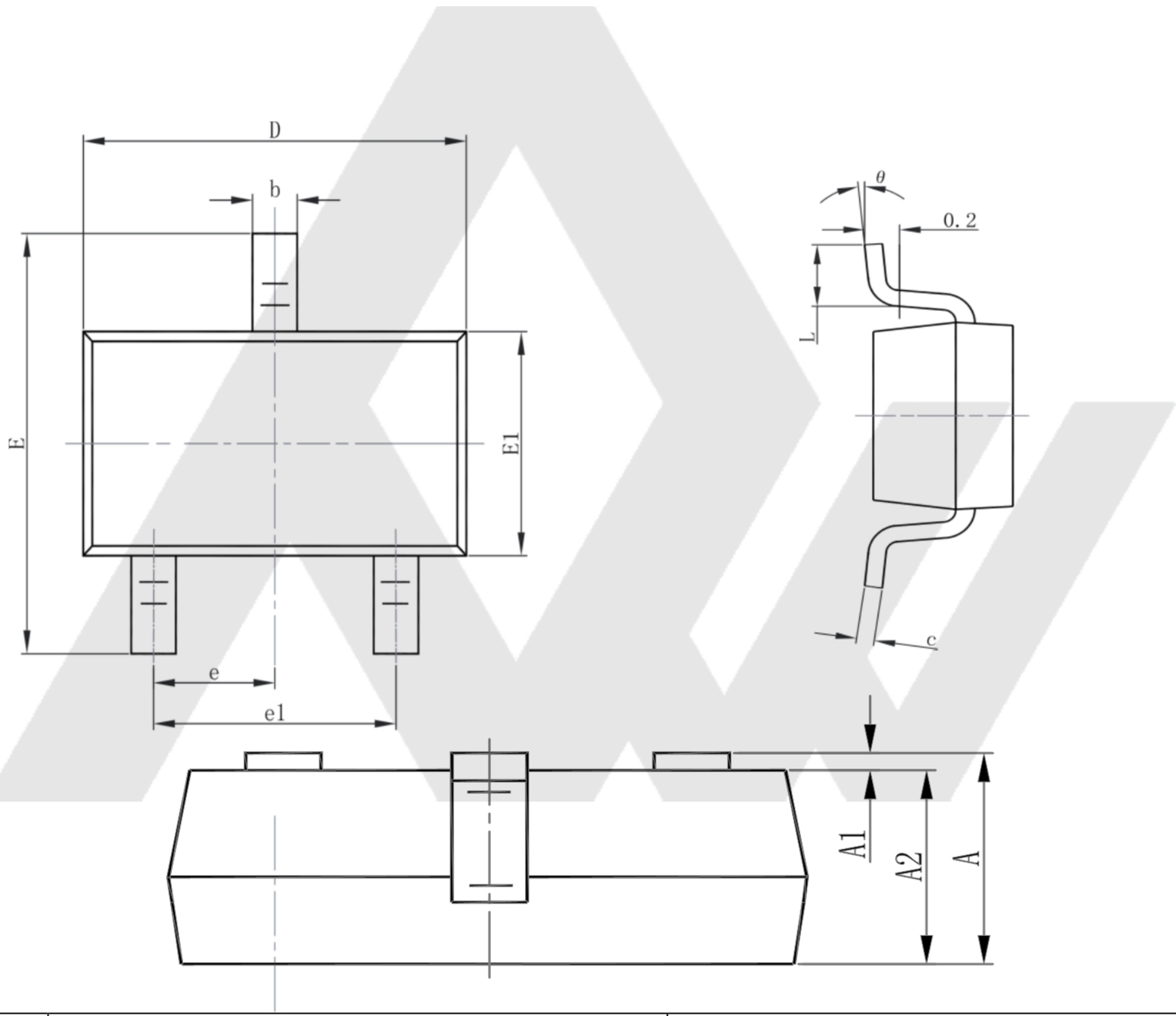


Fig.11 Normalized Maximum Transient Thermal Impedance

PACKAGE DESCRIPTION

SOT23-3L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.

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