

General Features

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package
- Available in SOT23-3 Package

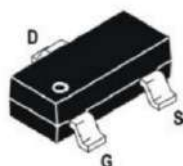
Product Summary



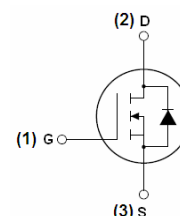
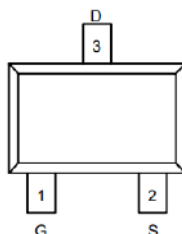
VDS	30	V
RDS(on), Typ. @ VGS=10 V	29	mΩ
ID	5.8	A

Applications

- PWM applications
- Load switch
- Power management



SOT23-3 Top View



N-channel

Absolute Maximum Ratings $T_A=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current	I_D	$T_A=25^{\circ}\text{C}$	5.8
		$T_A=70^{\circ}\text{C}$	4.9
Pulsed Drain Current ^C	I_{DM}	30	A
Power Dissipation ^B	P_D	$T_A=25^{\circ}\text{C}$	1.4
		$T_A=70^{\circ}\text{C}$	0.9
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$R_{\theta JA}$	70	90	$^{\circ}\text{C}/\text{W}$
Maximum Junction-to-Ambient ^{A, D}		100	125	$^{\circ}\text{C}/\text{W}$
Maximum Junction-to-Lead	$R_{\theta JL}$	63	80	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =250μA, V _{GS} =0V	30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =24V, V _{GS} =0V T _J =55°C			1 5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} = ±12V			100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} I _D =250μA	0.7	1.1	1.4	V
I _{D(ON)}	On state drain current	V _{GS} =4.5V, V _{DS} =5V	30			A
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =5.8A T _J =125°C		29	32 39	mΩ
		V _{GS} =4.5V, I _D =5A		32	36	mΩ
		V _{GS} =2.5V, I _D =4A		40	52	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =5A		15		S
V _{SD}	Diode Forward Voltage	I _S =1A, V _{GS} =0V		0.77	1	V
I _S	Maximum Body-Diode Continuous Current				2	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz		823		pF
C _{oss}	Output Capacitance			99		pF
C _{rss}	Reverse Transfer Capacitance			77		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	2	4	6	Ω
SWITCHING PARAMETERS						
t _{D(on)}	Turn-On DelayTime	V _{GS} =10V, V _{DS} =15V, R _L =2.6Ω, R _{GEN} =3Ω		3.3		ns
t _r	Turn-On Rise Time			4.8		ns
t _{D(off)}	Turn-Off DelayTime			26.3		ns
t _f	Turn-Off Fall Time			4.1		ns

A. The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25° C. The value in any given application depends on the user's specific board design.

B. The power dissipation P_D is based on T_{J(MAX)}=150° C, using ≤ 10s junction-to-ambient thermal resistance.

C. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150° C. Ratings are based on low frequency and duty cycles to keep initial T_J=25° C.

D. The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead to ambient.

E. The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.

F. These curves are based on the junction-to-ambient thermal impedance which is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, assuming a maximum junction temperature of T_{J(MAX)}=150° C. The SOA curve provides a single pulse rating.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

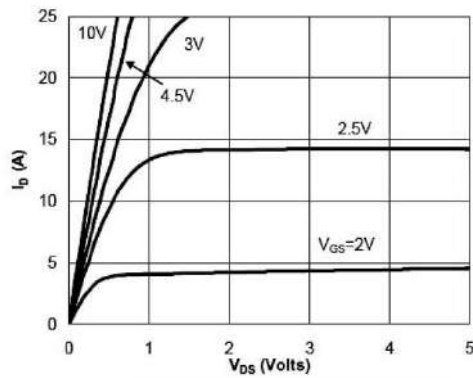


Fig 1: On-Region Characteristics (Note E)

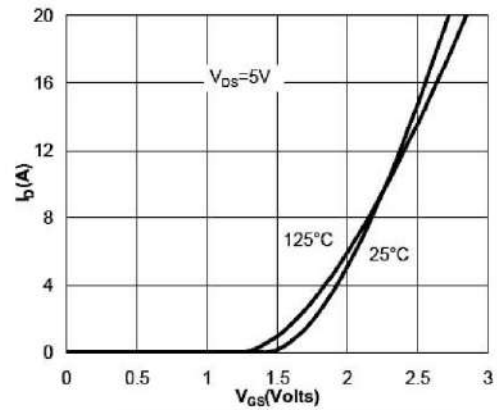


Figure 2: Transfer Characteristics (Note E)

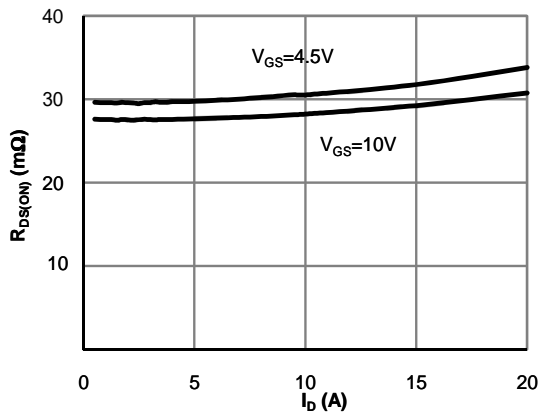


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

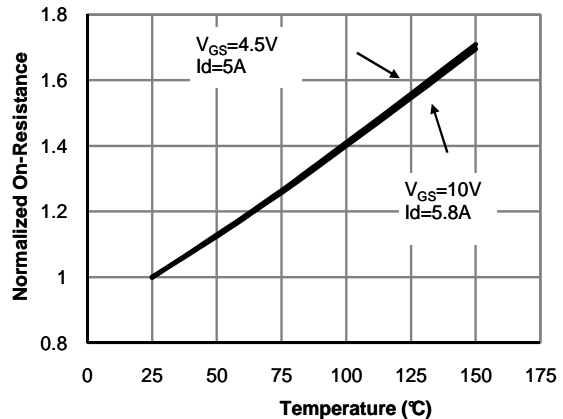


Figure 4: On-Resistance vs. Junction Temperature (Note E)

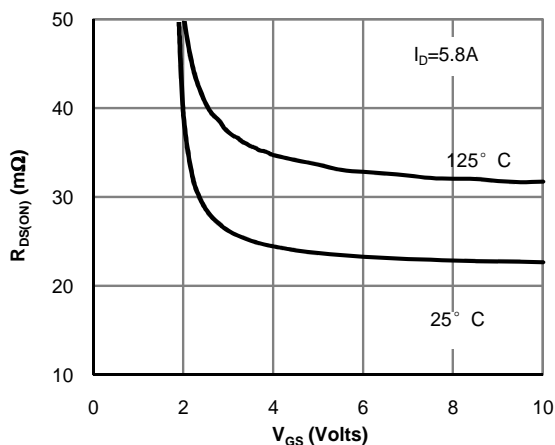


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

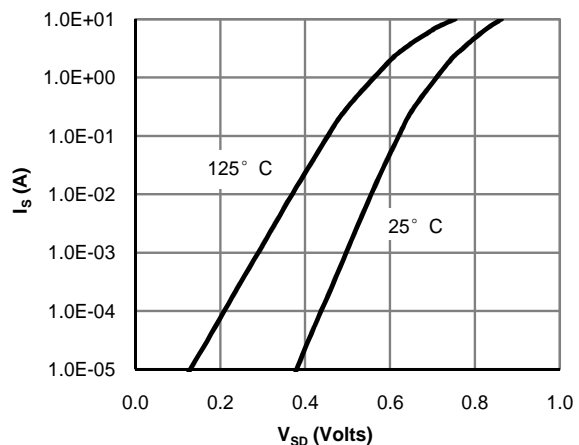


Figure 6: Body-Diode Characteristics (Note E)

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

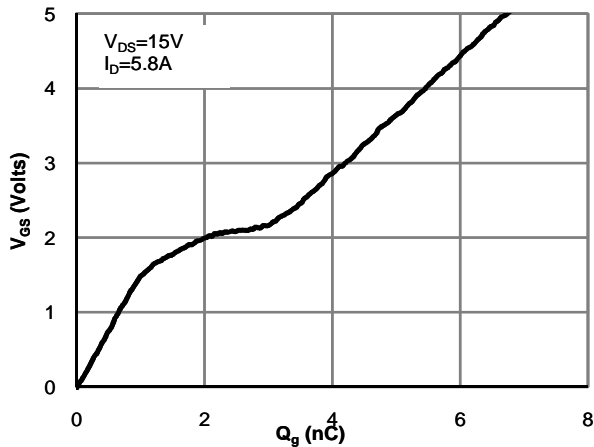


Figure 7: Gate-Charge Characteristics

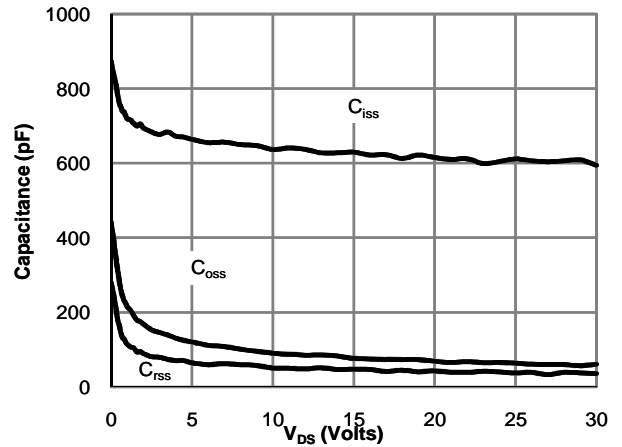


Figure 8: Capacitance Characteristics

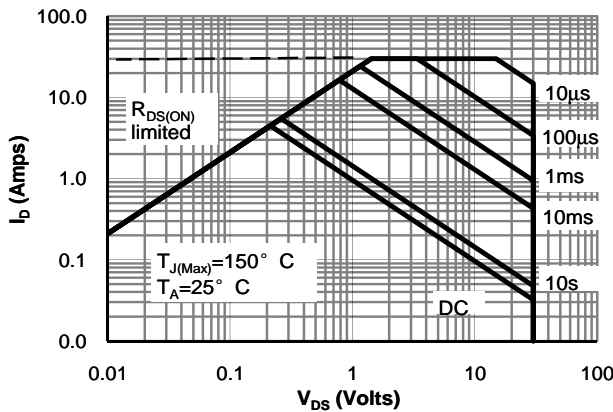


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

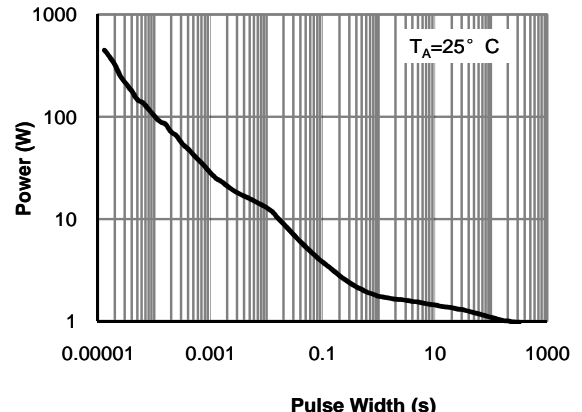


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

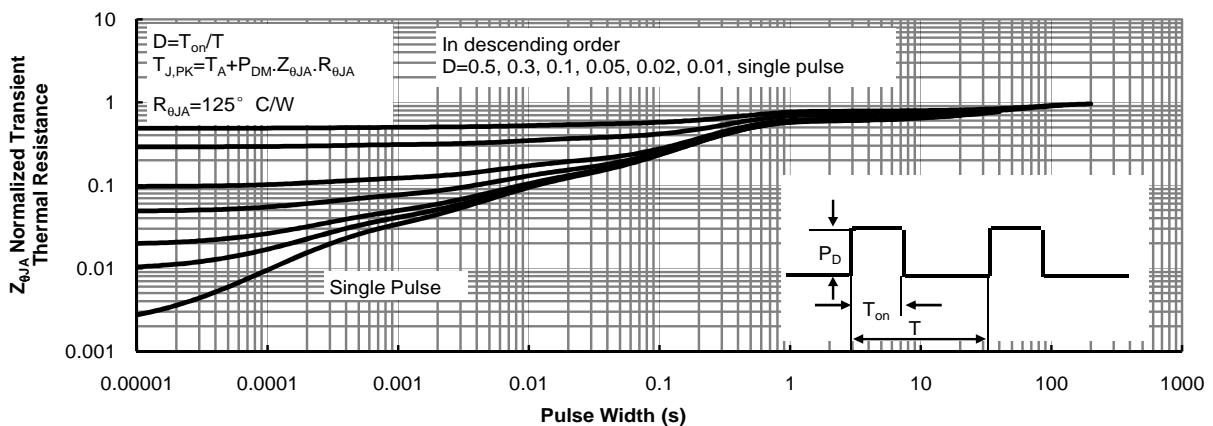
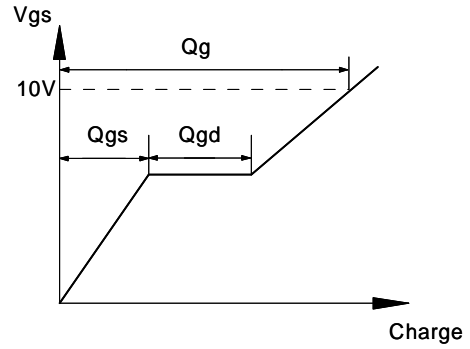
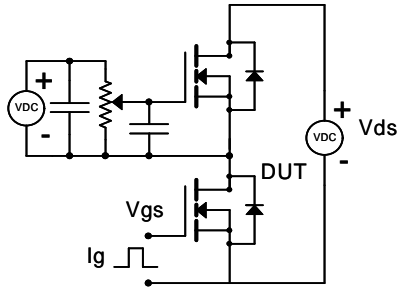
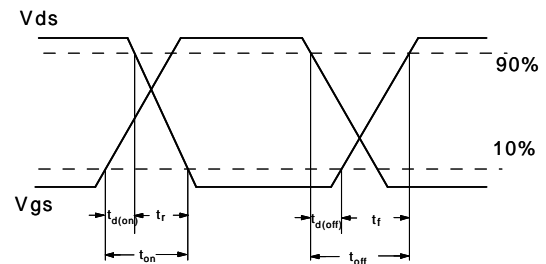
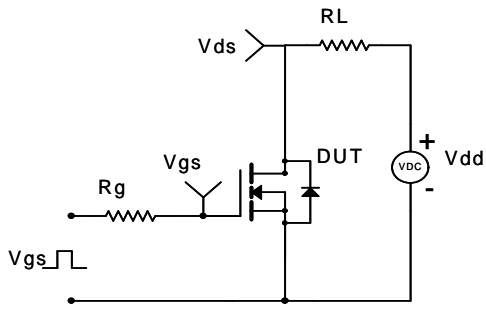


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

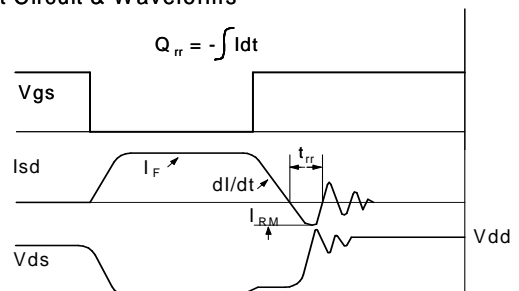
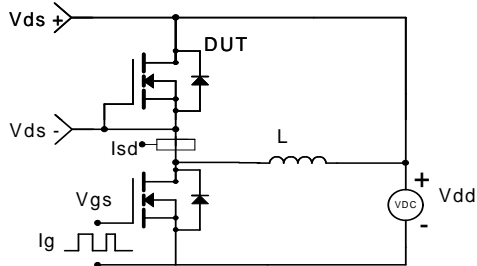
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms

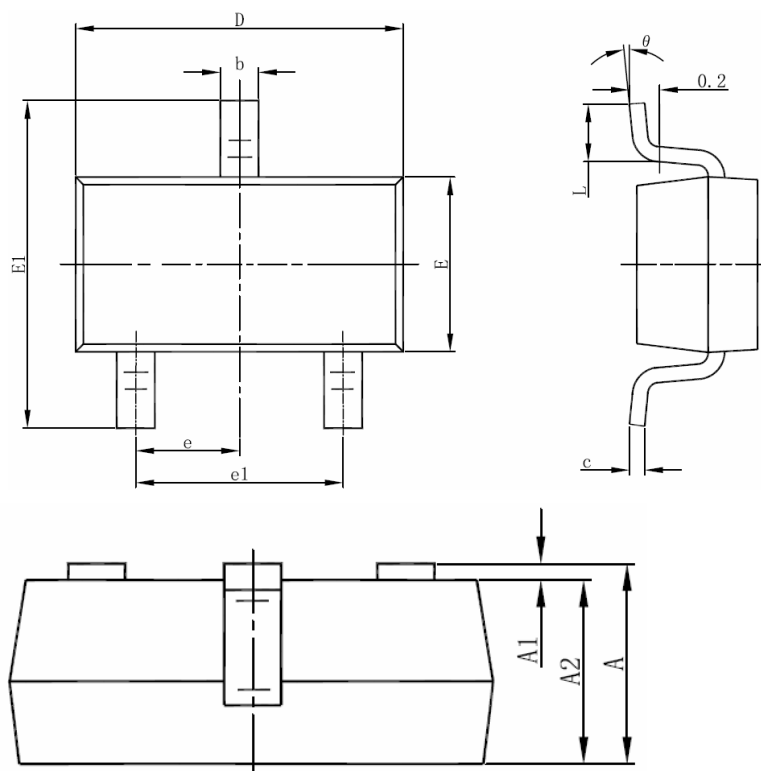


Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
JM3E3400ZB-R	3400	SOT23-3	Tape&Reel	3000

PACKAGE	MARKING
SOT23-3	<div style="border: 1px solid black; width: 100px; height: 40px; margin: 0 auto; display: flex; align-items: center; justify-content: center;"> 3400 </div>

SOT-23-3 PACKAGE INFORMATION



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
E	1.500	1.700	0.059	0.067
E1	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°

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