

General Features

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

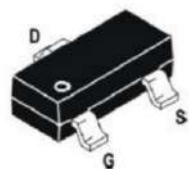
Product Summary



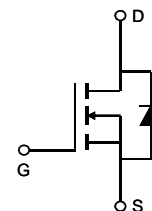
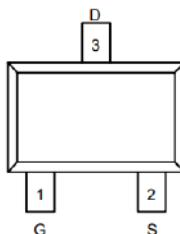
VDS	30	V
RDS(on), Typ.@ VGS=10 V	33	mΩ
ID	4.5	A

Applications

- PWM applications
- Load switch
- Power management



SOT23 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}	± 20	V
Continuous Drain Current	I_D	$T_A=25^{\circ}\text{C}$	A
		$T_A=70^{\circ}\text{C}$	
Pulsed Drain Current ^C	I_{DM}	17	
Power Dissipation ^B	P_D	$T_A=25^{\circ}\text{C}$	W
		$T_A=70^{\circ}\text{C}$	
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	$t \leq 10\text{s}$	$R_{\theta JA}$	70	90	$^{\circ}\text{C}/\text{W}$
Maximum Junction-to-Ambient ^{A D}	Steady-State		100	125	$^{\circ}\text{C}/\text{W}$
Maximum Junction-to-Lead	Steady-State	$R_{\theta JL}$	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} =30V, V _{GS} =0V T _J =55°C			1 5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±20V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} I _D =250μA	1	1.5	2.5	V
I _{D(ON)}	On state drain current	V _{GS} =10V, V _{DS} =5V	15			A
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =4.5A T _J =125°C		33 70	45 84	mΩ
		V _{GS} =4.5V, I _D =4A		53	75	mΩ
g _{FS}	Forward Transconductance	V _{DS} =5V, I _D =3.6A		14		S
V _{SD}	Diode Forward Voltage	I _S =1A, V _{GS} =0V		0.75	1	V
I _S	Maximum Body-Diode Continuous Current				1.5	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, f=1MHz	185	235	285	pF
C _{oss}	Output Capacitance		25	35	45	pF
C _{rss}	Reverse Transfer Capacitance		10	18	25	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	2.1	4.3	6.5	Ω
SWITCHING PARAMETERS						
Q _g (10V)	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, I _D =4A		10	12	nC
Q _g (4.5V)	Total Gate Charge		4.7		nC	
Q _{gs}	Gate Source Charge		0.95		nC	
Q _{gd}	Gate Drain Charge		1.6		nC	
t _{D(on)}	Turn-On DelayTime	V _{GS} =10V, V _{DS} =15V, R _L =3.75Ω, R _{GEN} =3Ω		3.5		ns
t _r	Turn-On Rise Time		1.5		ns	
t _{D(off)}	Turn-Off DelayTime		17.5		ns	
t _f	Turn-Off Fall Time		2.5		ns	
t _{rr}	Body Diode Reverse Recovery Time	I _F =4A, dI/dt=100A/μs		8.5	11	ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =4A, dI/dt=100A/μs		2.6	3.5	nC

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

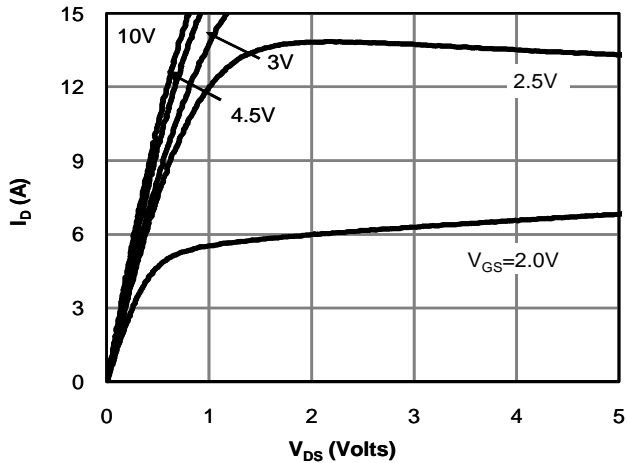


Fig 1: On-Region Characteristics (Note E)

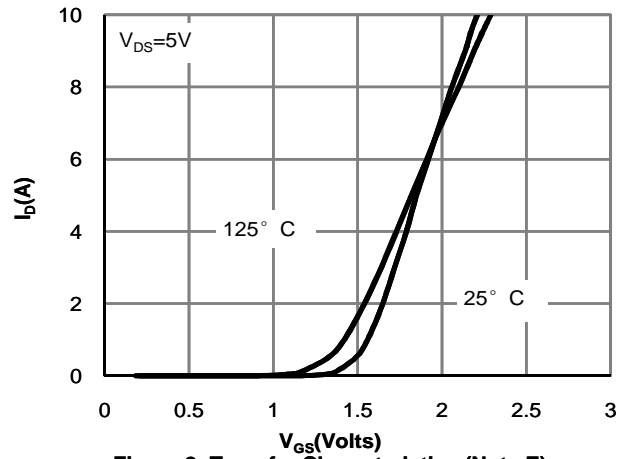


Figure 2: Transfer Characteristics (Note E)

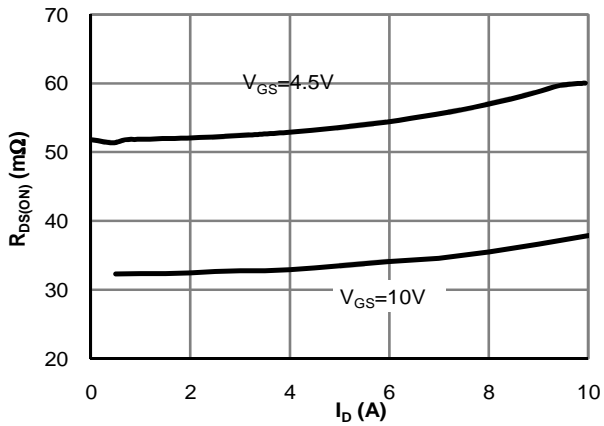


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

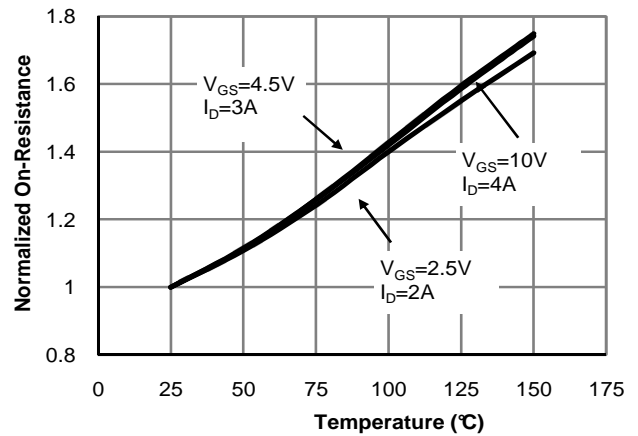


Figure 4: On-Resistance vs. Junction Temperature (Note E)

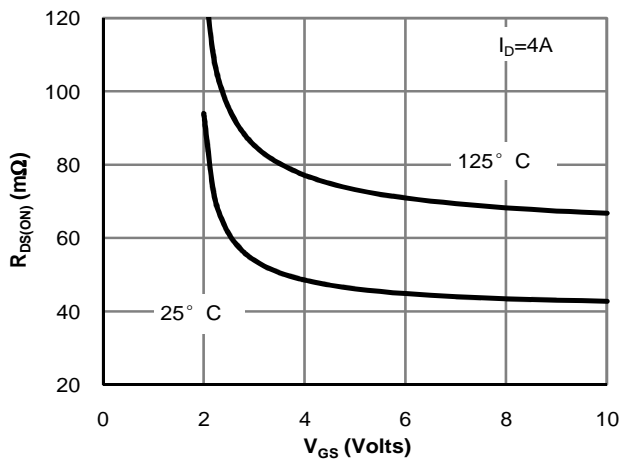


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

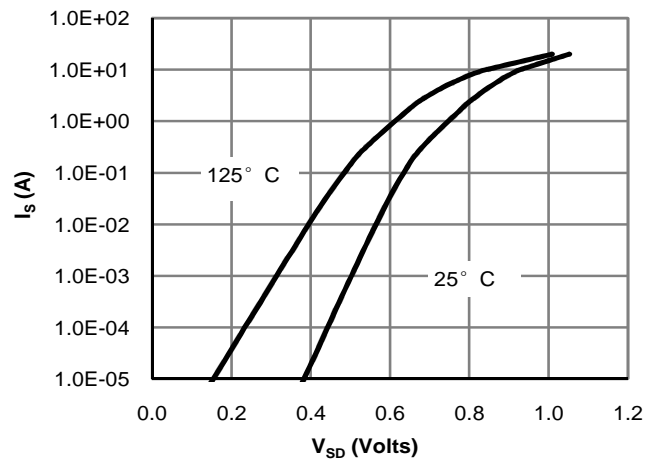


Figure 6: Body-Diode Characteristics (Note E)

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

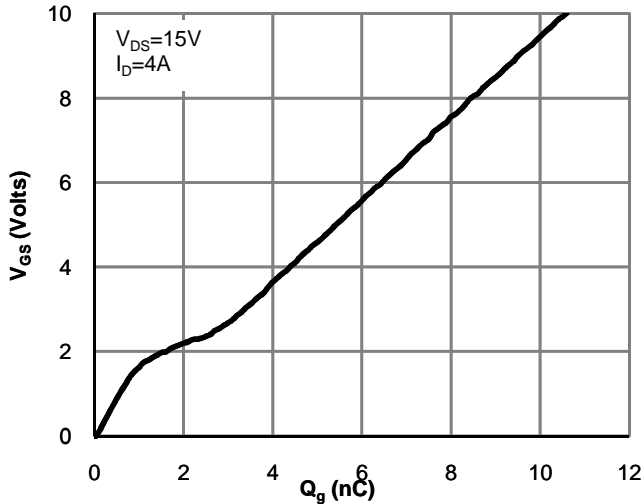


Figure 7: Gate-Charge Characteristics

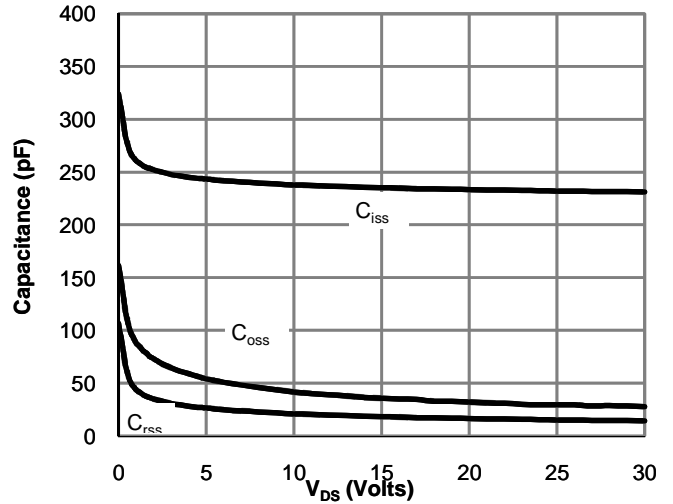


Figure 8: Capacitance Characteristics

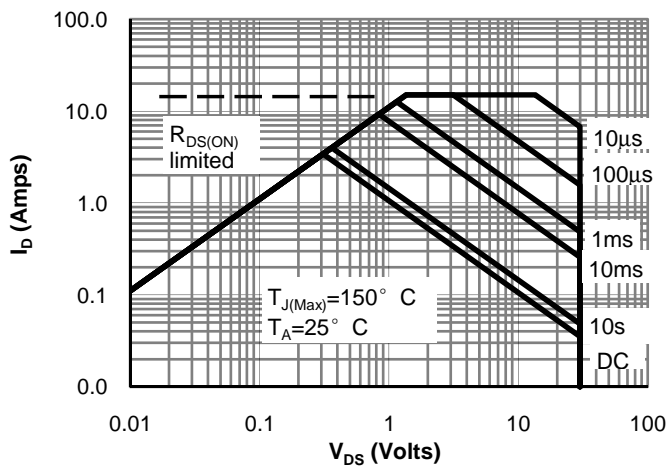


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

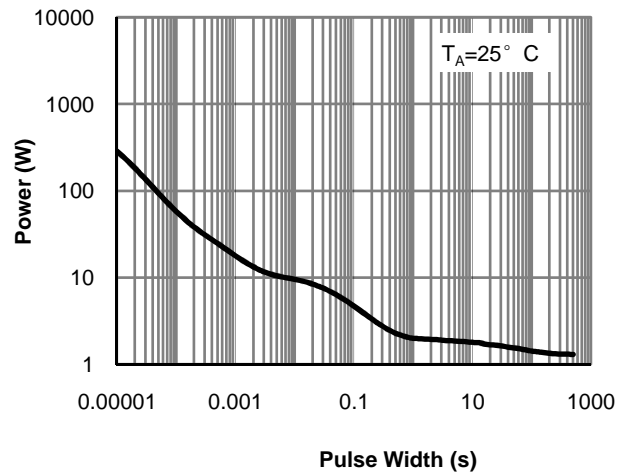


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

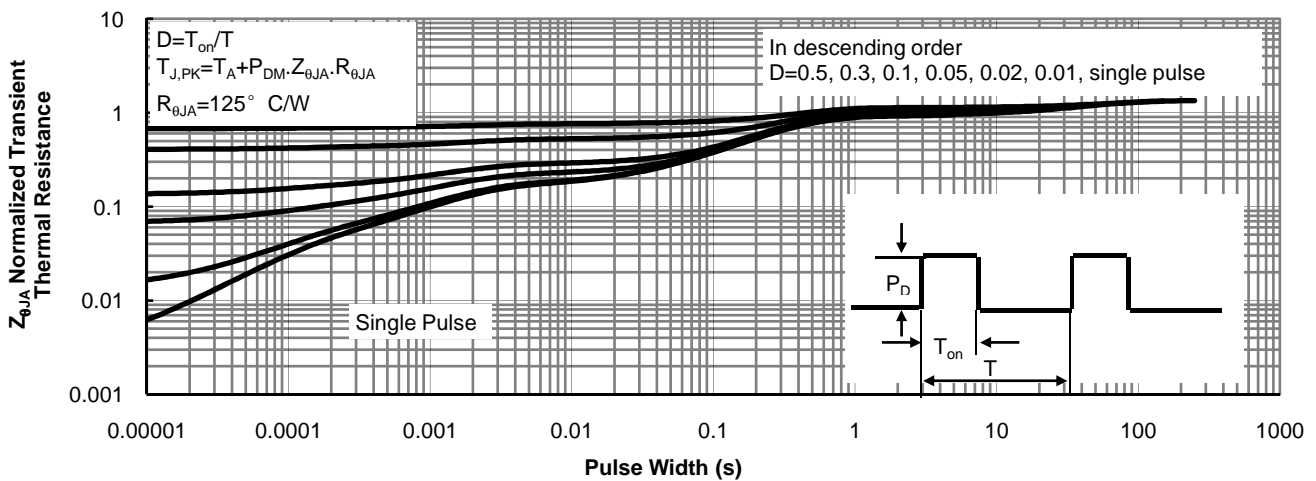
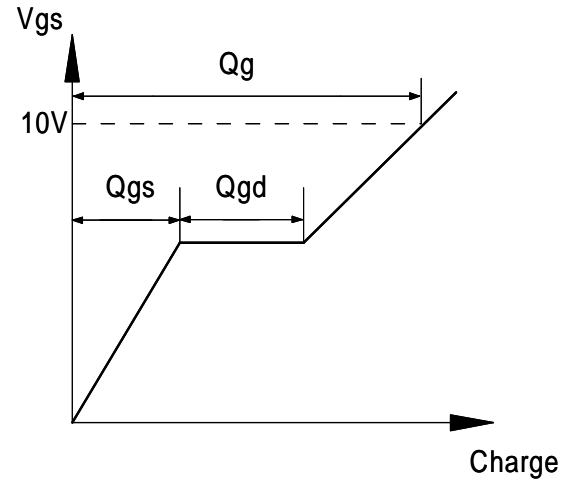
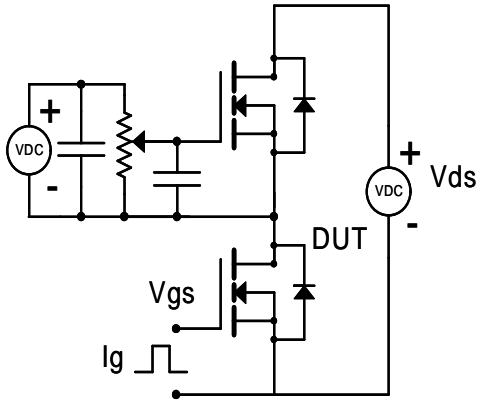
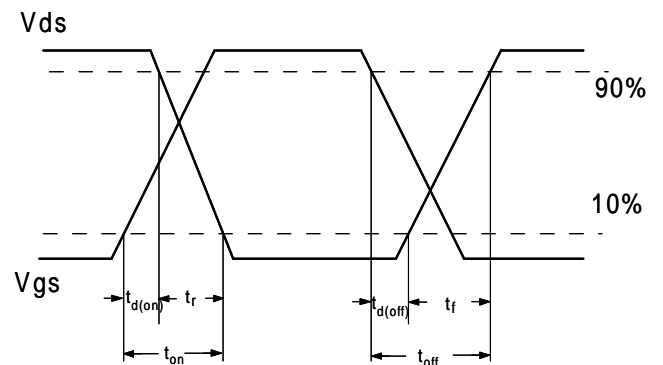
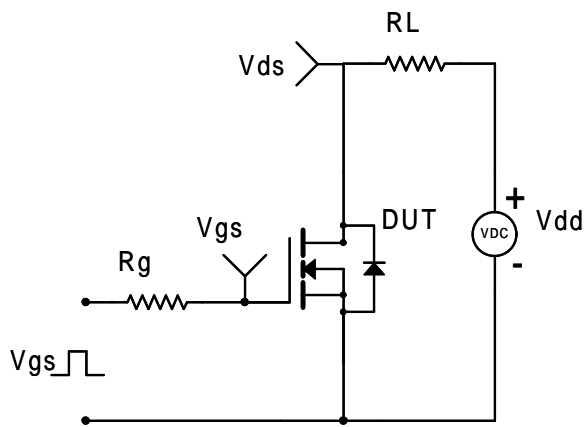


Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

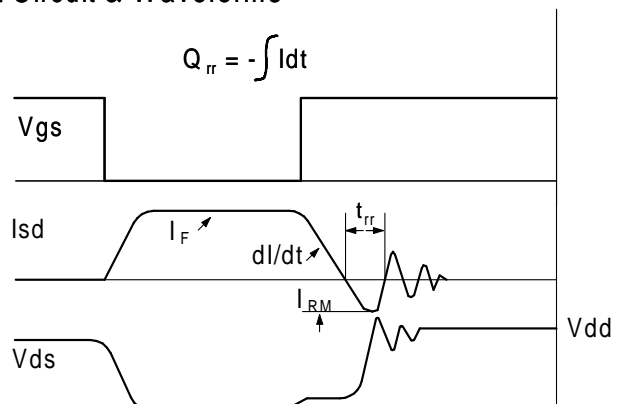
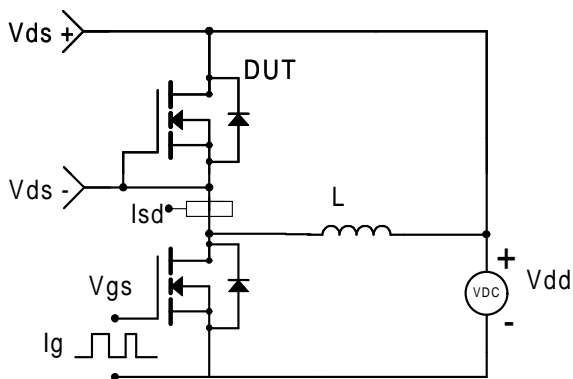
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms




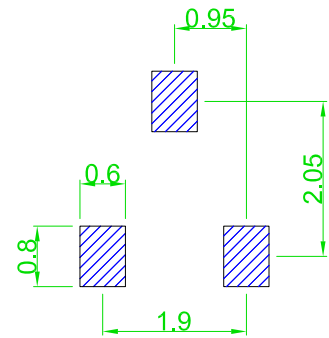
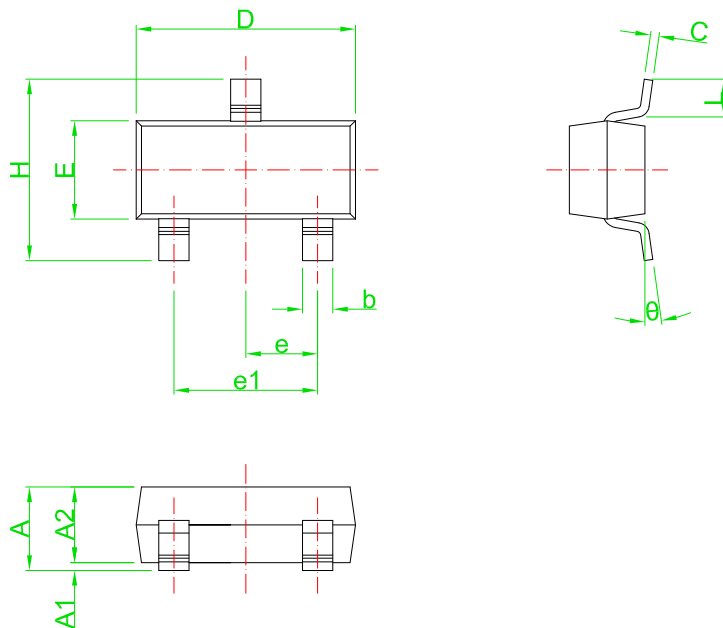
Diode Recovery Test Circuit & Waveforms



Ordering and Marking Information

Ordering Device No.	Marking	Package	Packing	Quantity
JME3402ZA-R	3402	SOT23	Tape&Reel	3000

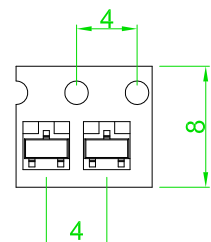
PACKAGE	MARKING
SOT23	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> <p>3402 </p> </div>



Recommended Land Pattern

SOT23

Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.90	1.15	0.035	0.045
A1	0.00	0.10	0.000	0.004
A2	0.90	1.05	0.035	0.041
b	0.30	0.55	0.012	0.022
C	0.08	0.15	0.003	0.006
D	2.80	3.00	0.110	0.118
E	1.20	1.40	0.047	0.055
e	0.95 TYP		0.037 TYP	
e1	1.80	2.00	0.071	0.079
H	2.25	2.55	0.089	0.100
L	0.30	0.50	0.012	0.020
θ	0°	8°	0°	8°



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