



# 20V P-Channel Enhancement Mode MOSFET

## EC732315A

### Description

EC732315A, P-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge. These devices are particularly suited for low Voltage power management, such as smart Phone and notebook computer and other battery powered circuits, and low in-line power loss are needed in commercial industrial surface mount applications.

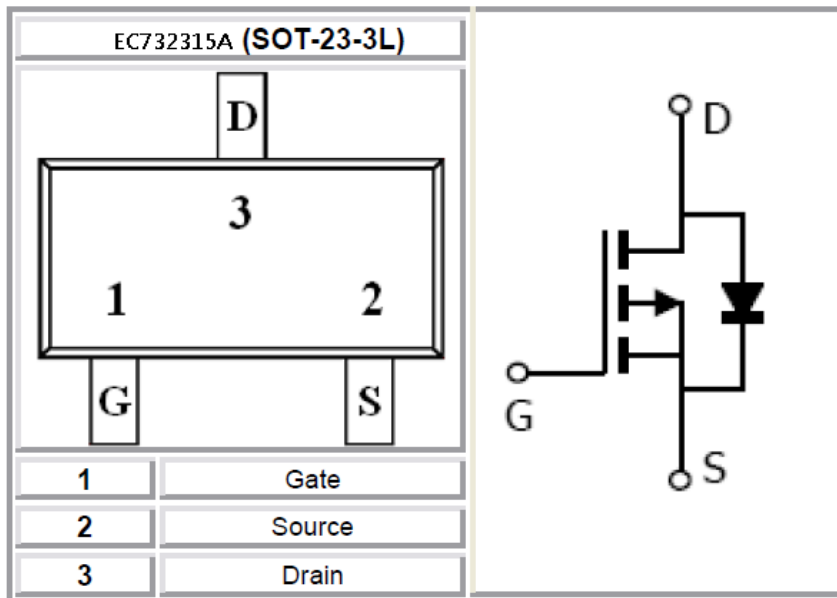
### Features

- ◆ -20V/-4.9A,  $R_{DS(ON)}=45m\Omega@V_{GS}=-4.5V$
- ◆ -20V/-3.4A,  $R_{DS(ON)}=58m\Omega@V_{GS}=-2.5V$
- ◆ -20V/-2.2A,  $R_{DS(ON)}=85m\Omega@V_{GS}=-1.8V$
- ◆ Super high density cell design for extremely low  $R_{DS(ON)}$
- ◆ Exceptional on-resistance and maximum DC current capability
- ◆ SOT-23-3L package design

### Applications

- ◆ Portable Equipment
- ◆ Battery Powered System
- ◆ Net Working System

### Packages & Pin Assignments



### Ordering / Marking Information

## EC732315A XX R

Package Type : ← XX → R : Tape & Reel  
 B1 : SOT23-3

Part Number	Package	Marking	Marking Information
EC732315AB1R	SOT23	BYX	B : Sequence code Y : Yearly code (ex:2021=B, 2022=C, 2023=D...) X : Internal tracking code



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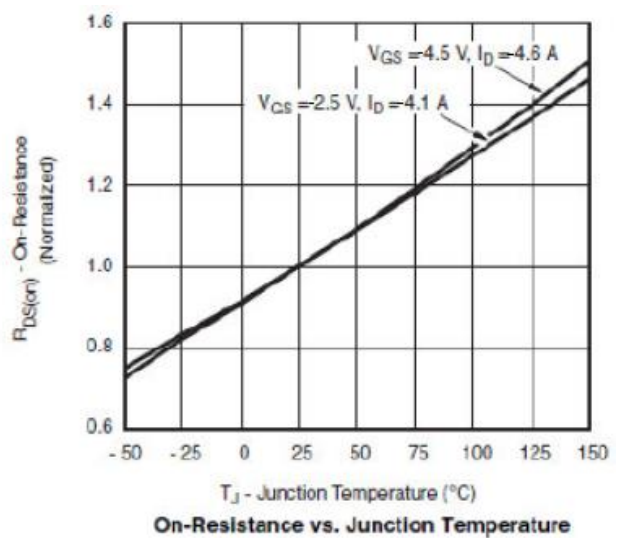
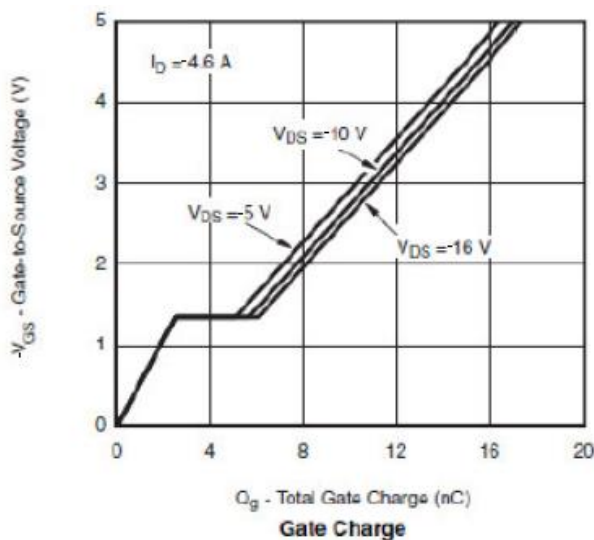
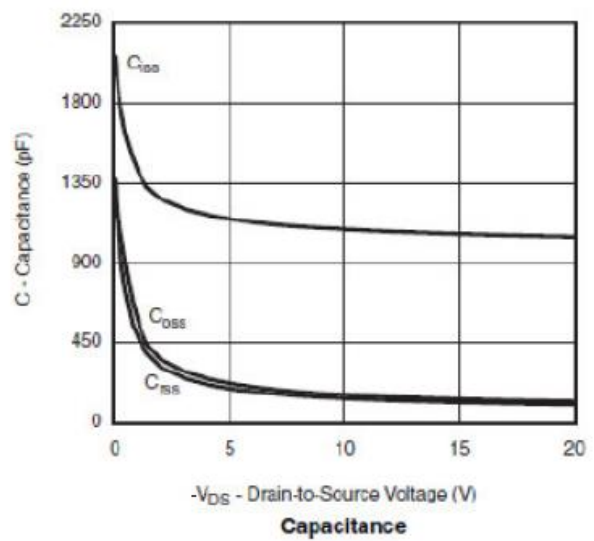
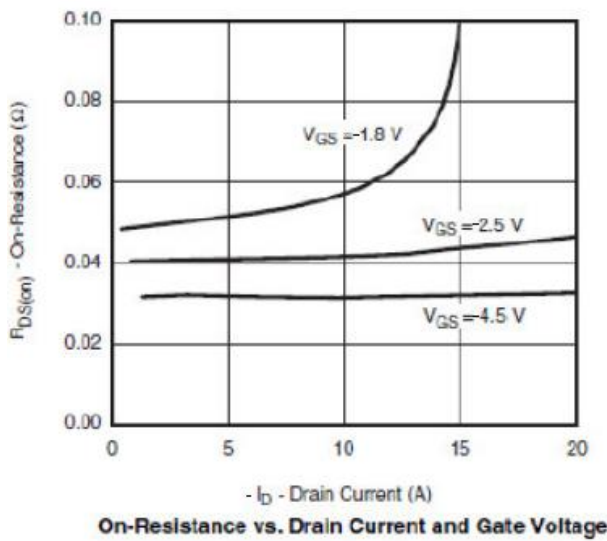
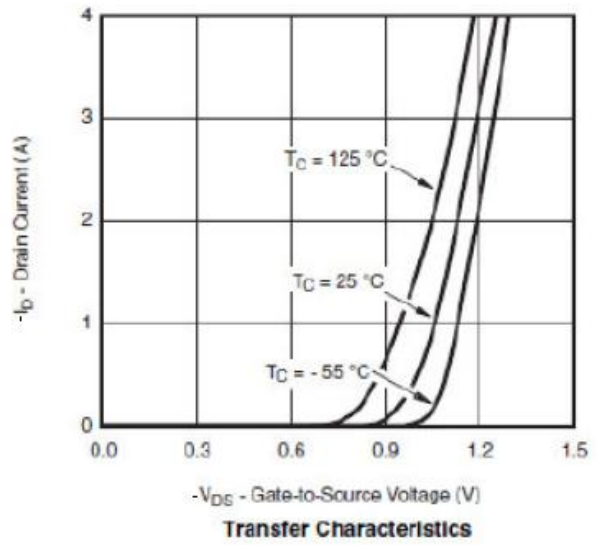
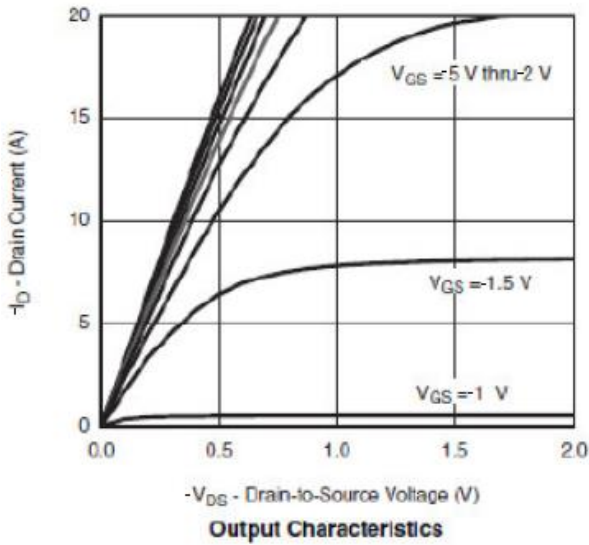
### Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	-20	V
V <sub>GSS</sub>	Gate –Source Voltage	±12	V
I <sub>D</sub>	Continuous Drain Current(T <sub>J</sub> =150°C)	T <sub>A</sub> =25°C	-4.9
		T <sub>A</sub> =70°C	-3.9
I <sub>DM</sub>	Pulsed Drain Current	-10	A
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	-1.6	A
P <sub>D</sub>	Power Dissipation	T <sub>A</sub> =25°C	1.25
		T <sub>A</sub> =70°C	0.8
T <sub>J</sub>	Operating Junction Temperature	150	°C
T <sub>STG</sub>	Storage Temperature Range	-55/150	°C
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient	120	°C/W

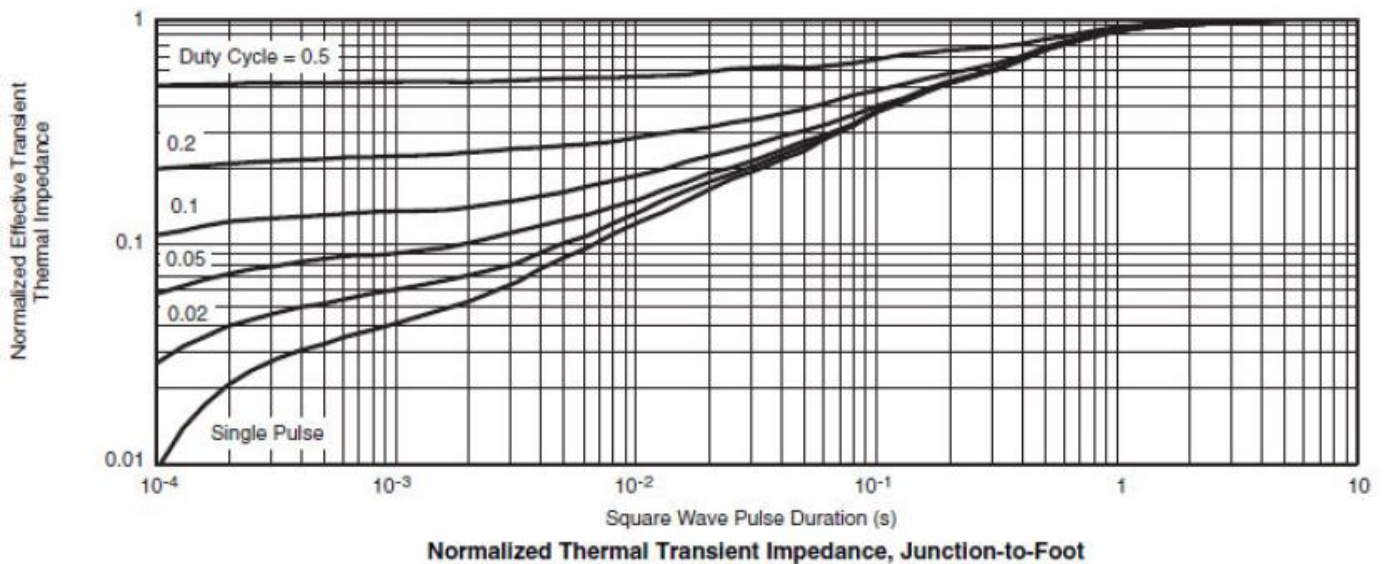
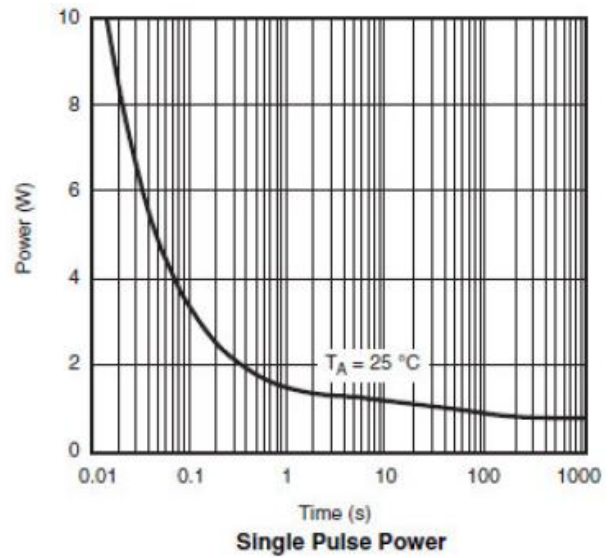
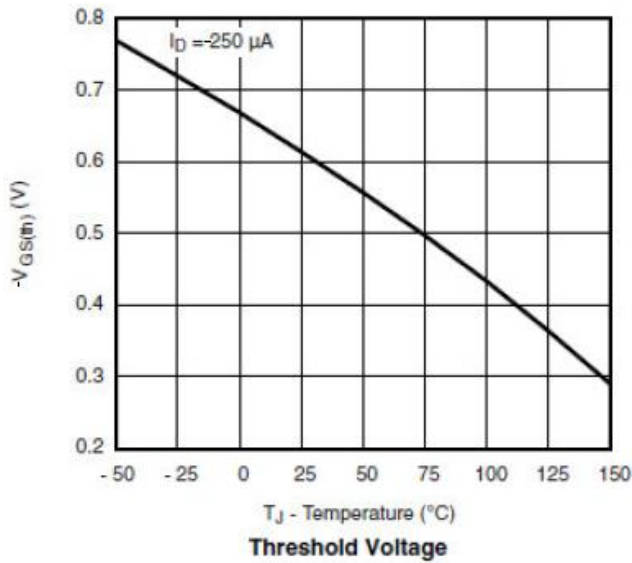
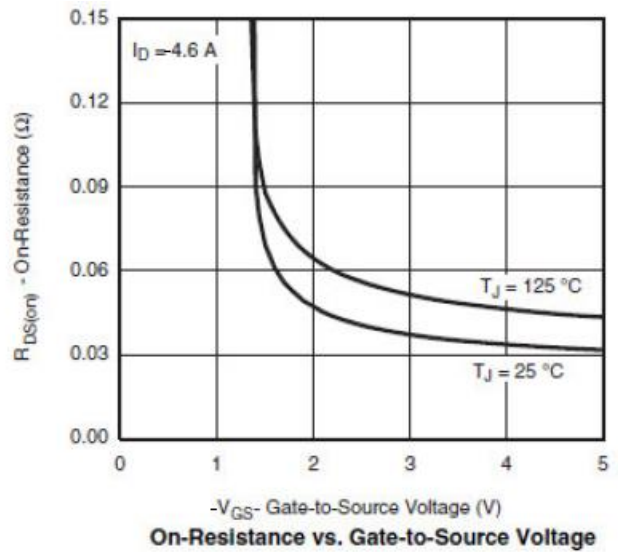
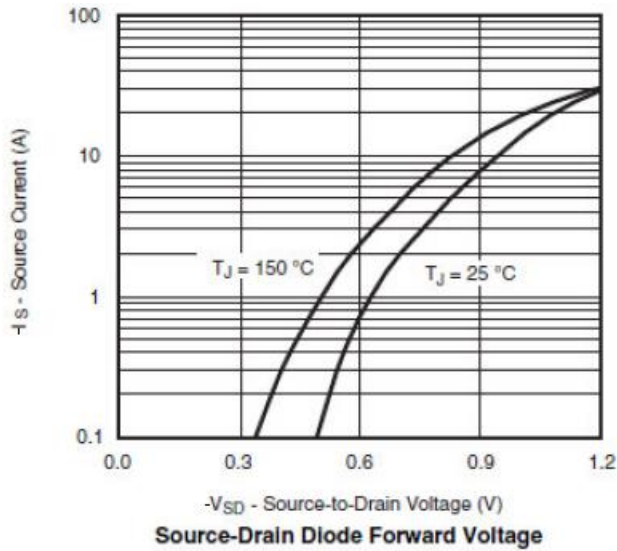
### Electrical Characteristics (TA=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>Static</b>						
V <sub>(BR)DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250uA	-20			V
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250uA	-0.4		-0.9	
I <sub>GSS</sub>	Gate Leakage Current	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V			-1	
		V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V				
I <sub>D(on)</sub>	On-State Drain Current	V <sub>DS</sub> ≥ -5V, V <sub>GS</sub> =-4.5V	-6			A
		V <sub>DS</sub> ≤ -5V, V <sub>GS</sub> =-2.5V	-4			A
R <sub>DS(on)</sub>	Drain-Source On-Resistance	V <sub>GS</sub> = -4.5V, I <sub>D</sub> =-4.9A		40	45	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> =-3.4A		50	58	
		V <sub>GS</sub> = -1.8V, I <sub>D</sub> =-2.2A		60	85	
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-5V, I <sub>D</sub> =-3.6A		10		S
V <sub>SD</sub>	Diode Forward Voltage	I <sub>S</sub> =-1.6A, V <sub>GS</sub> =0V		-0.85	-1.2	V
<b>Dynamic</b>						
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-4.0A		10	18	nC
Q <sub>gs</sub>	Gate-Source Charge			2.5		
Q <sub>gd</sub>	Gate-Drain Charge			3.5		
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-10V, V <sub>GS</sub> =0V, f=1MHz		1050		pF
C <sub>OSS</sub>	Output Capacitance			165		
C <sub>rss</sub>	Reverse Transfer Capacitance			135		
t <sub>d(on)</sub>	Turn-Off Time	V <sub>DD</sub> =-10V, R <sub>L</sub> =2.7Ω, I <sub>D</sub> =-3.7A, V <sub>GEN</sub> =-4.5V, R <sub>G</sub> =1Ω		15	25	ns
t <sub>r</sub>				25	40	
t <sub>d(off)</sub>	Turn-Off Time			40	65	
t <sub>f</sub>				15	25	

### Typical Performance Characteristics

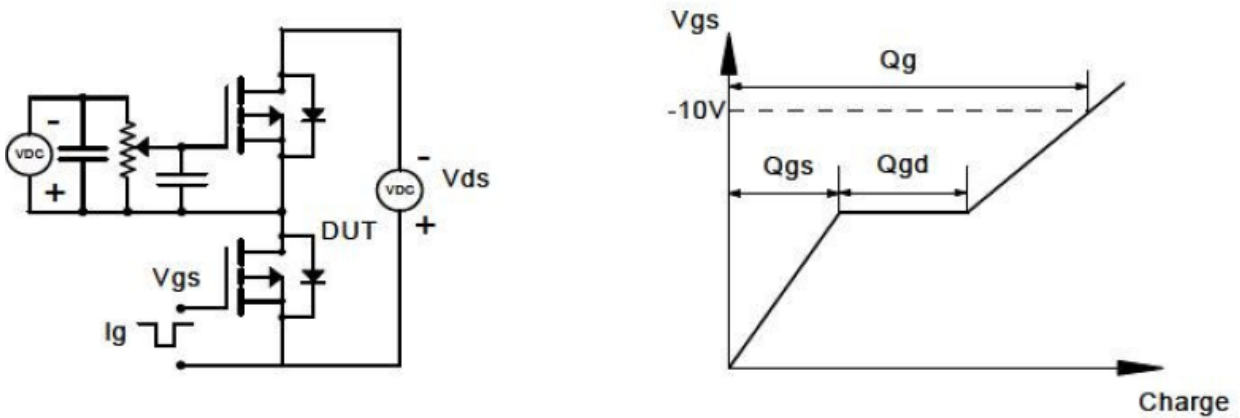


### Typical Performance Characteristics (continue)

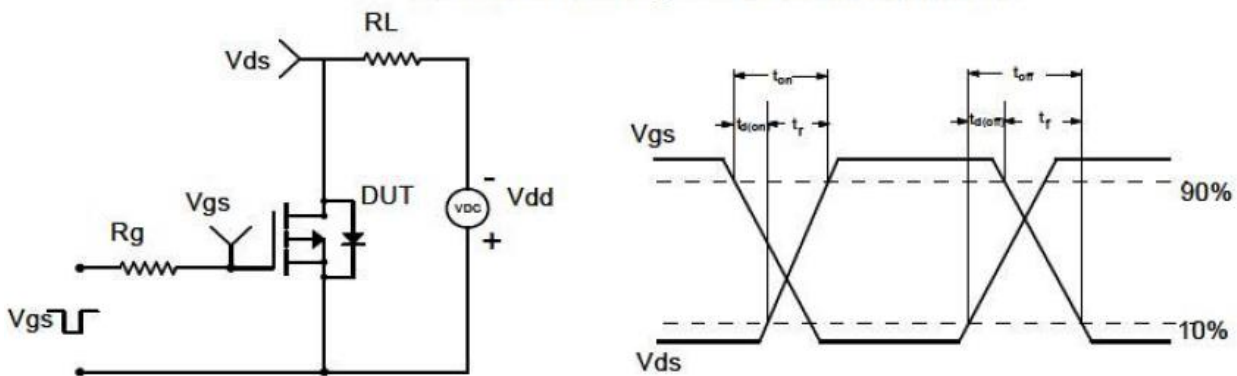


### Typical Performance Characteristics (continue)

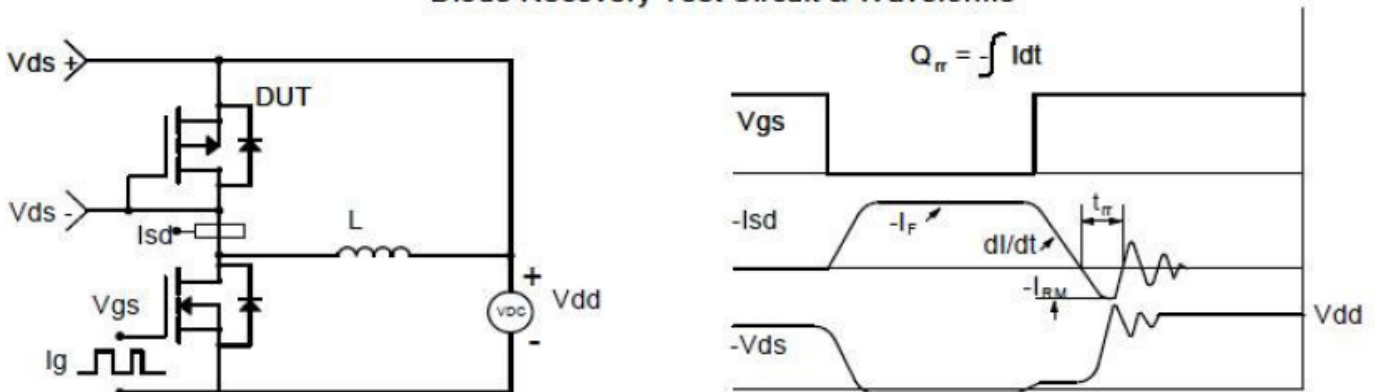
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

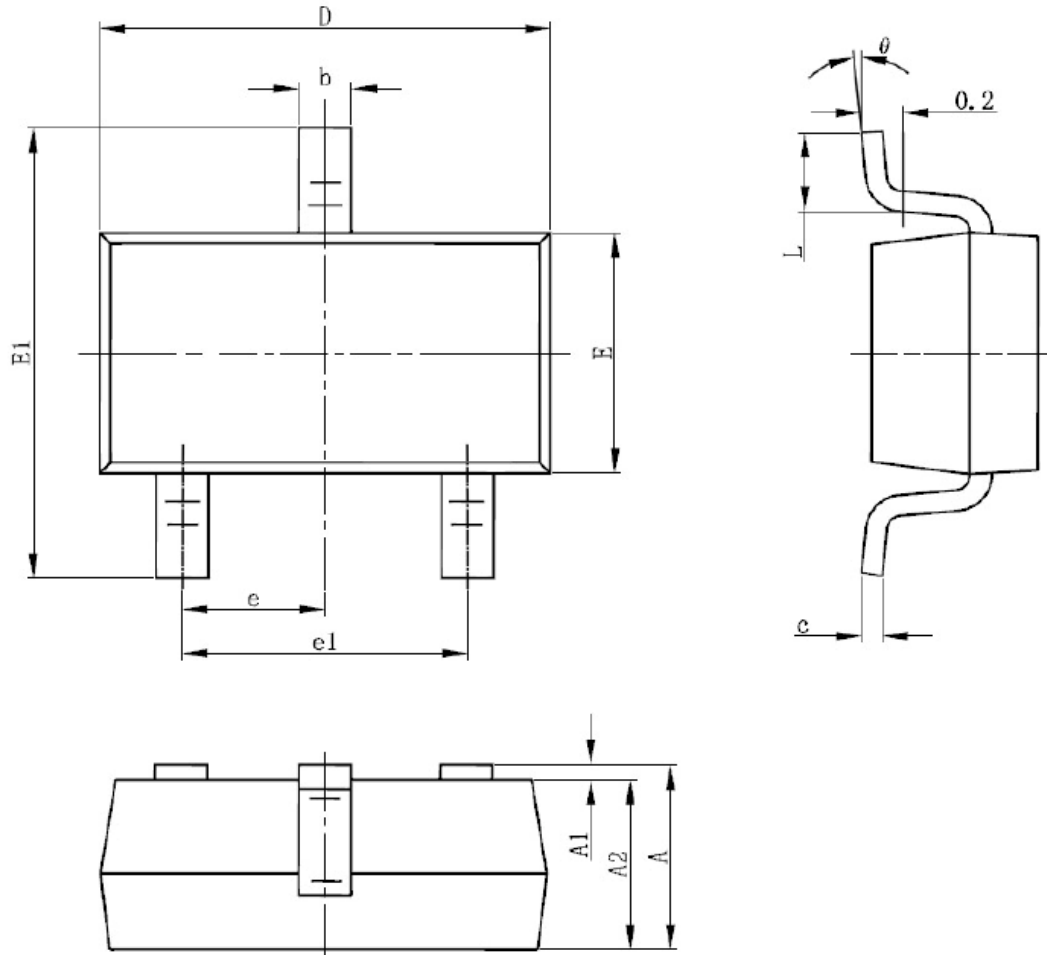


Diode Recovery Test Circuit & Waveforms



### Package Information

#### SOT23-3



Dimensions				
SYMBOL	Millimeters		Inches	
	MIN	MAX	MIN	MAX
A	1.05	1.25	0.041	0.049
A1	0	0.1	0	0.004
A2	1.05	1.15	0.041	0.045
b	0.3	0.4	0.012	0.016
c	0.1	0.2	0.004	0.008
D	2.82	3.02	0.111	0.119
E	1.5	1.7	0.059	0.067
E1	2.65	2.95	0.104	0.116
e	0.950(TYP)		0.037(TYP)	
e1	1.8	2	0.071	0.079
L	0.700 REF		0.028 REF	
L1	0.3	0.6	0.012	0.024
Q	0°	8°	0°	8°

