

# GSM3401AS

## 30V P-Channel Enhancement Mode MOSFET

### Product Description

GSM3401AS, 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, and low in-line power loss are needed in commercial industrial surface mount applications.

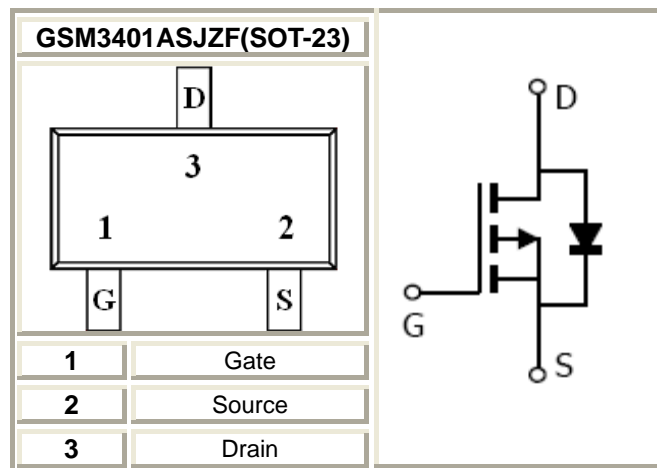
### Features

- -30V/-2.4  $R_{DS(ON)}=70m\Omega@V_{GS}=-10.0V$
- -30V/-1.8  $R_{DS(ON)}=80m\Omega@V_{GS}=-4.5V$
- -30V/-1.2  $R_{DS(ON)}=105m\Omega@V_{GS}=-2.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOT-23 package design

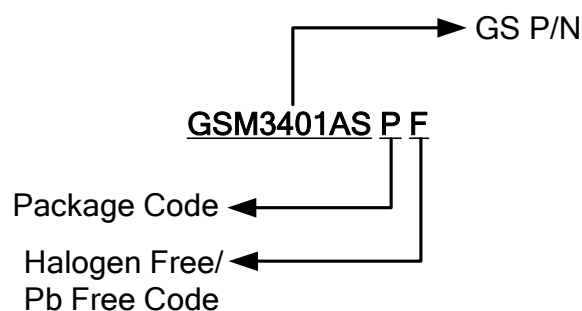
### Applications

- Power Management in Note book
- LED Display
- DC-DC System
- LCD Panel

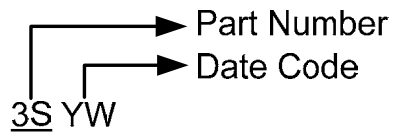
### Packages & Pin Assignments



### Ordering Information



## Marking Information



Part Number	Package	Part Marking
GSM3401ASJZF	SOT-23	<u>3S</u> YW

## Absolute Maximum Ratings

(T<sub>A</sub>=25°C unless otherwise noted)

Symbol	Parameter	Typical	Unit
V <sub>DSS</sub>	Drain-Source Voltage	-30	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	-2.4
		T <sub>A</sub> =70°C	-2.0
I <sub>DM</sub>	Pulsed Drain Current	-15	A
I <sub>S</sub>	Continuous Source Current(Diode Conduction)	-1.5	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

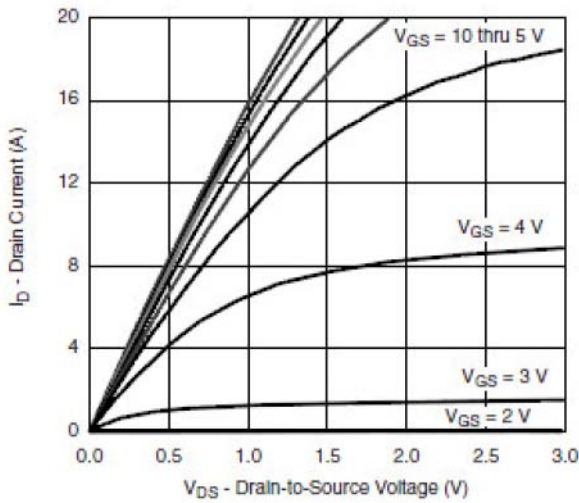
## Electrical Characteristics

( $T_A=25^\circ\text{C}$  unless otherwise noted)

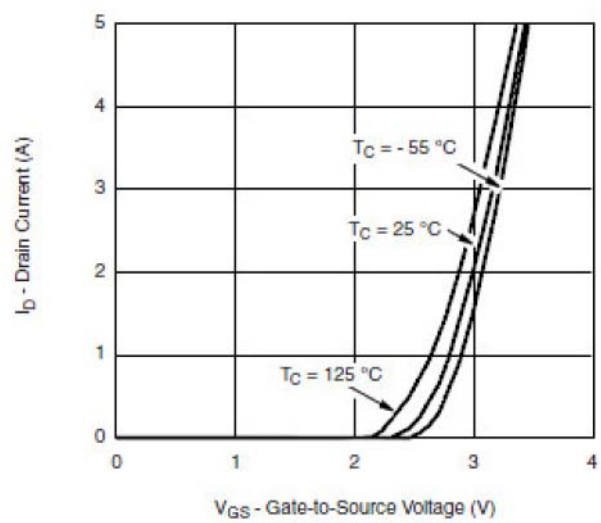
Symbol	Parameter	Conditions	Min.	Typ	Max.	Unit
<b>Static</b>						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.6		-1.1	
$I_{GSS}$	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 12V$			$\pm 100$	nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=-24V, V_{GS}=0V$			-1	uA
		$V_{DS}=-24V, V_{GS}=0V, T_J=85^\circ\text{C}$			-30	
$I_{D(on)}$	On-State Drain Current	$V_{DS}\leq -5V, V_{GS}=-4.5V$	-6			A
		$V_{DS}\leq -5V, V_{GS}=-2.5V$	-3			
$R_{DS(on)}$	Drain-Source On-Resistance	$V_{GS}=-10.0V, I_D=-2.4A$		60	70	m $\Omega$
		$V_{GS}=-4.5V, I_D=-1.8A$		70	80	
		$V_{GS}=-2.5V, I_D=-1.2A$		90	105	
$g_{fs}$	Forward Transconductance	$V_{DS}=-5V, I_D=-2.8A$		6.5		S
$V_{SD}$	Diode Forward Voltage	$I_S=-1.0A, V_{GS}=0V$		-0.7	-1.3	V
<b>Dynamic</b>						
$C_{iss}$	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$		450		pF
$C_{oss}$	Output Capacitance			95		
$C_{riss}$	Reverse Transfer Capacitance			55		
$Q_g$	Total Gate Charge	$V_{DS}=-15V, V_{GS}=-10V, I_D=-4.0A$		10	18	nC
$Q_{gs}$	Gate-Source Charge			1.6		
$Q_{gd}$	Gate-Drain Charge			3.0		
$t_{d(on)}$	Turn-On Time	$V_{DD}=-15V, R_L=15\Omega, I_D=-1.0A, V_{GEN}=-10V, R_G=6\Omega$		8	18	ns
$T_r$				8	18	
$t_{d(off)}$	Turn-Off Time			25	50	
$T_f$				25	35	

## Typical Performance Characteristics

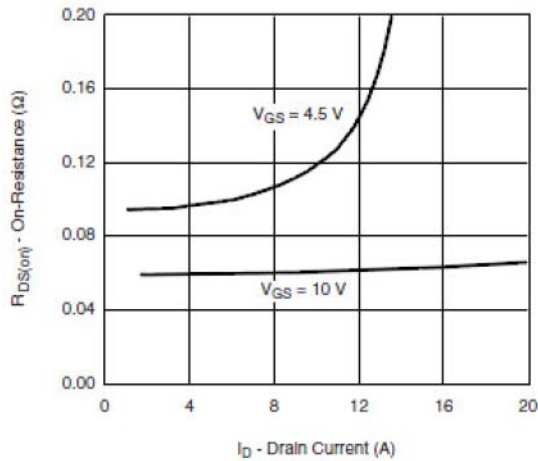
### Output Characteristics



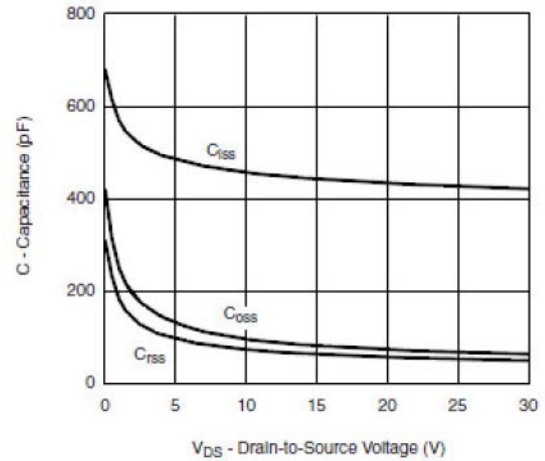
### Transfer Characteristics



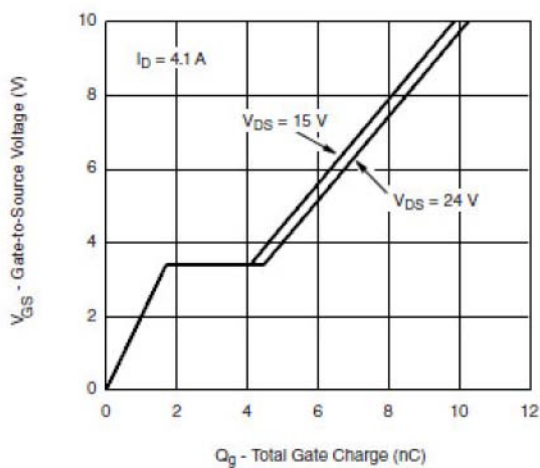
### On-Resistance vs. Drain Current and Gate Voltage



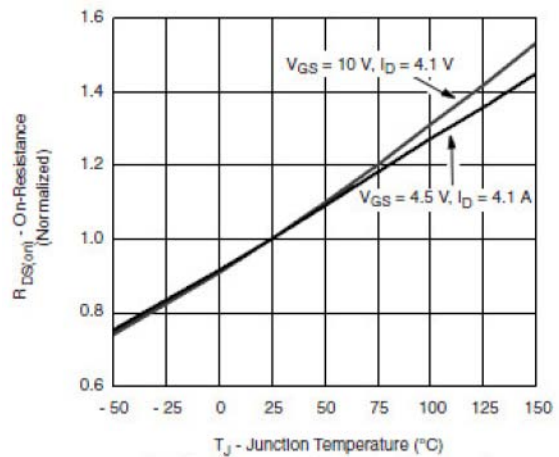
### Capacitance



### Gate Charge

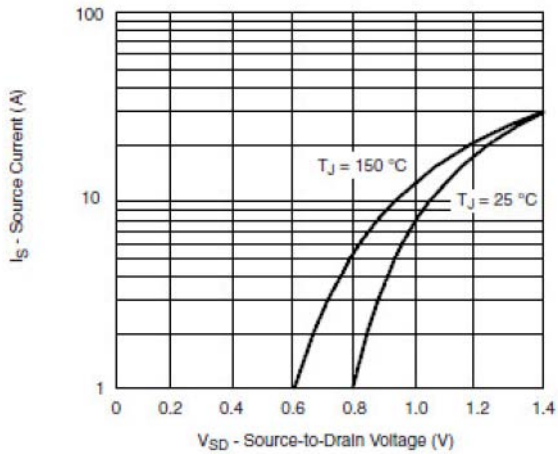


### On-Resistance vs. Junction Temperature

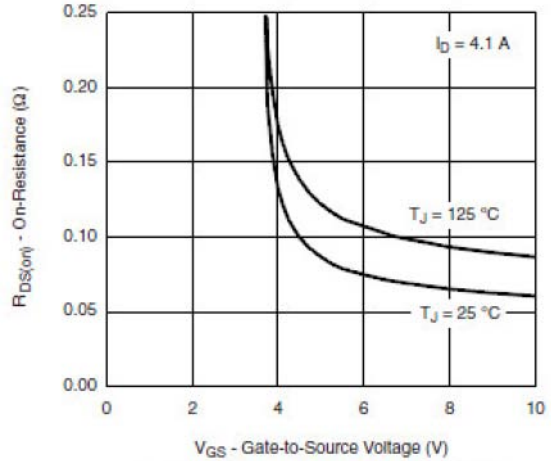


## Typical Performance Characteristics (continue)

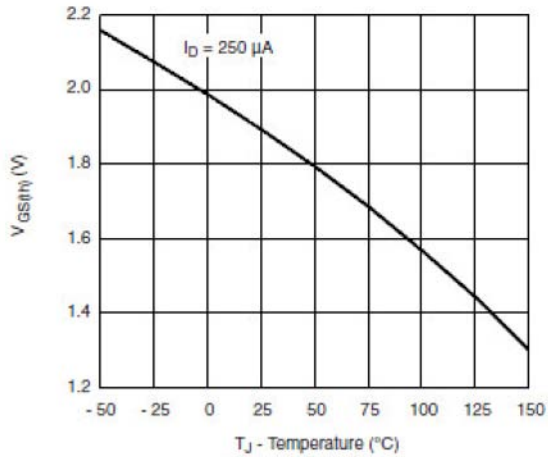
### Source-Drain Diode Forward Voltage



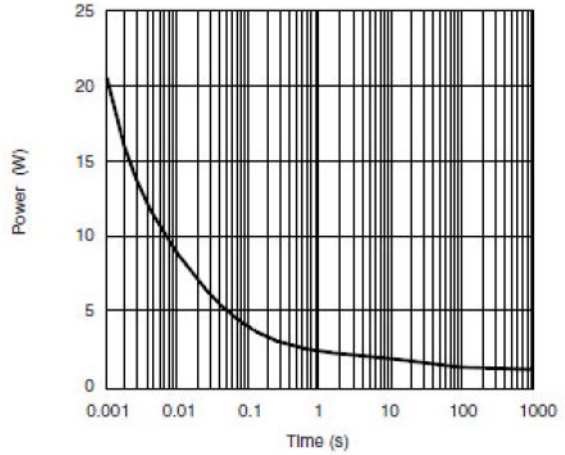
### On-Resistance vs. Gate-to-Source Voltage



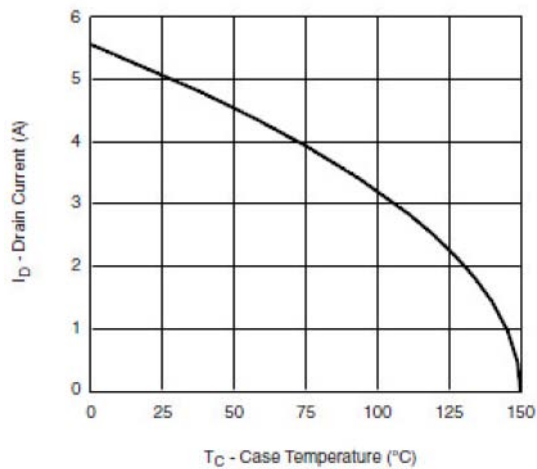
### Threshold Voltage



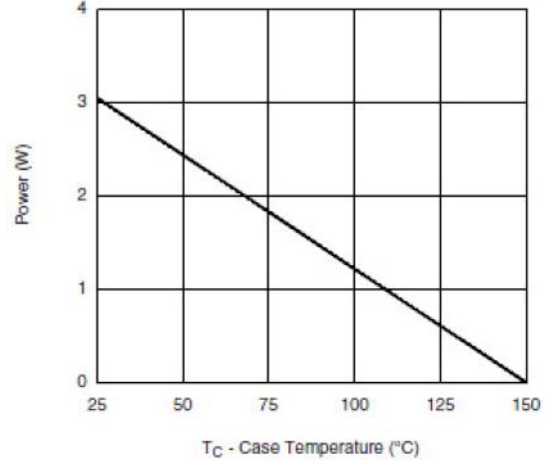
### Single Pulse Power



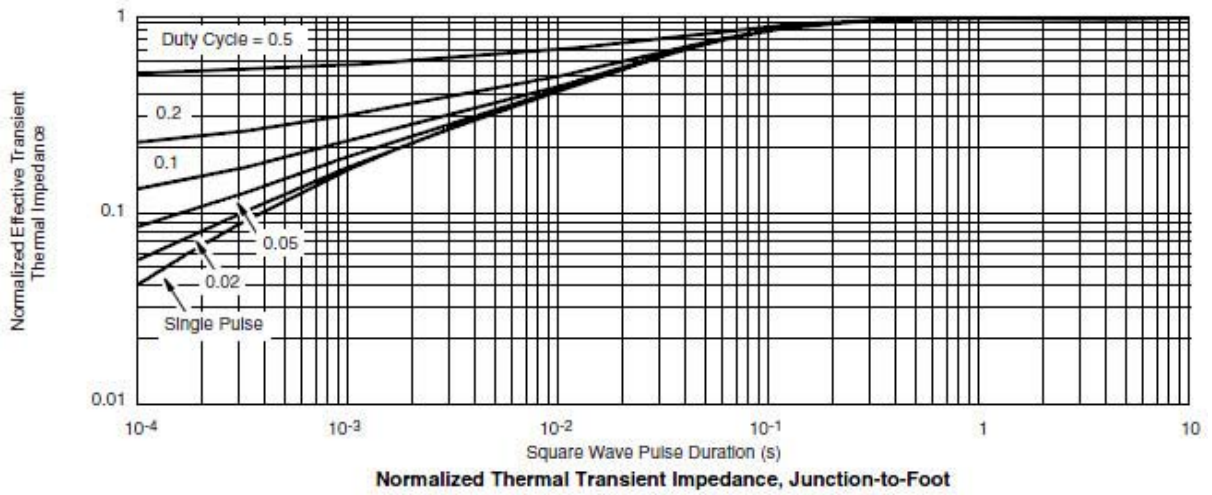
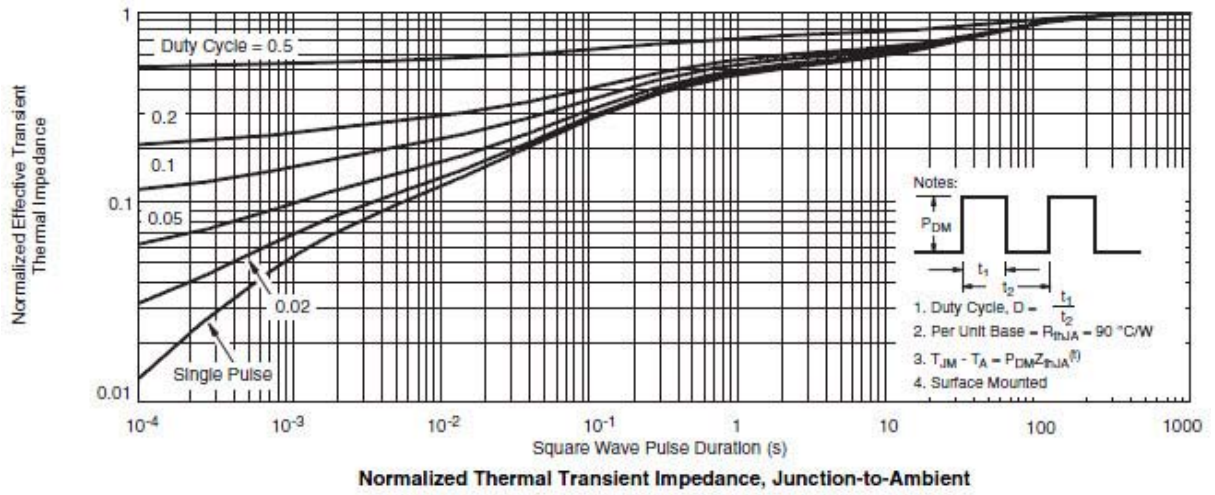
### Current Dating\*



### Power, Junction-to-Foot

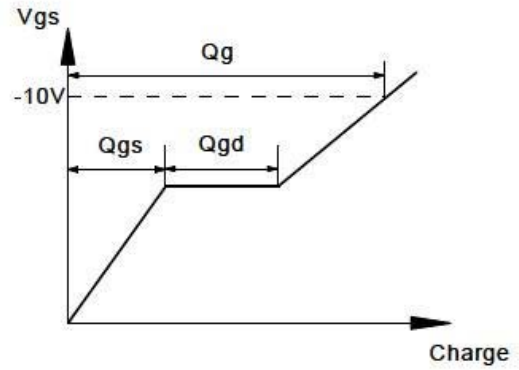
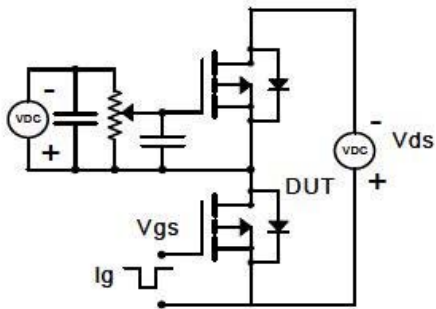


## Typical Characteristics

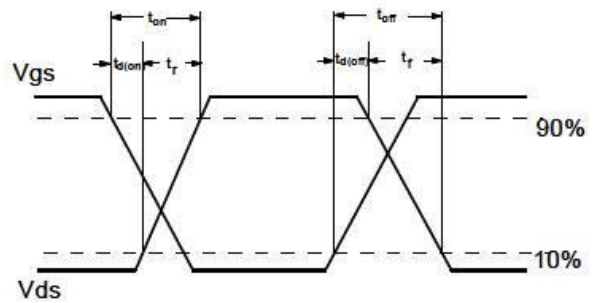
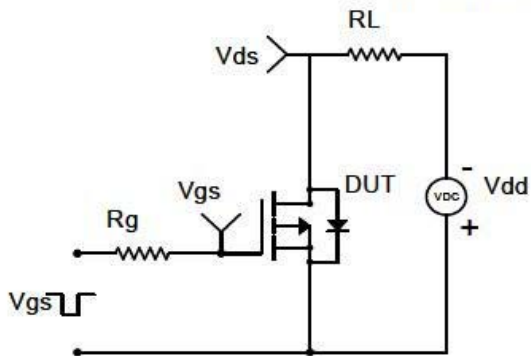


## Typical Characteristics

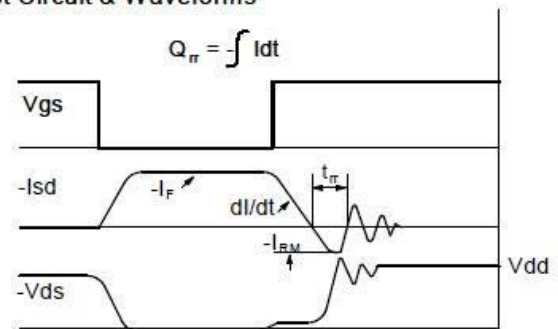
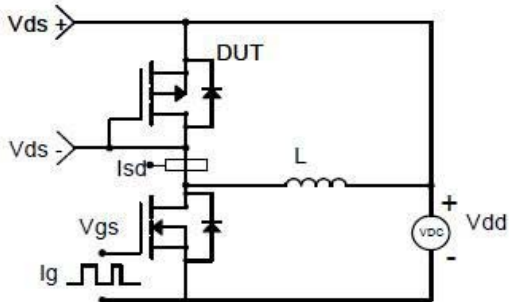
### Gate Charge Test Circuit & Waveform



### Resistive Switching Test Circuit & Waveforms

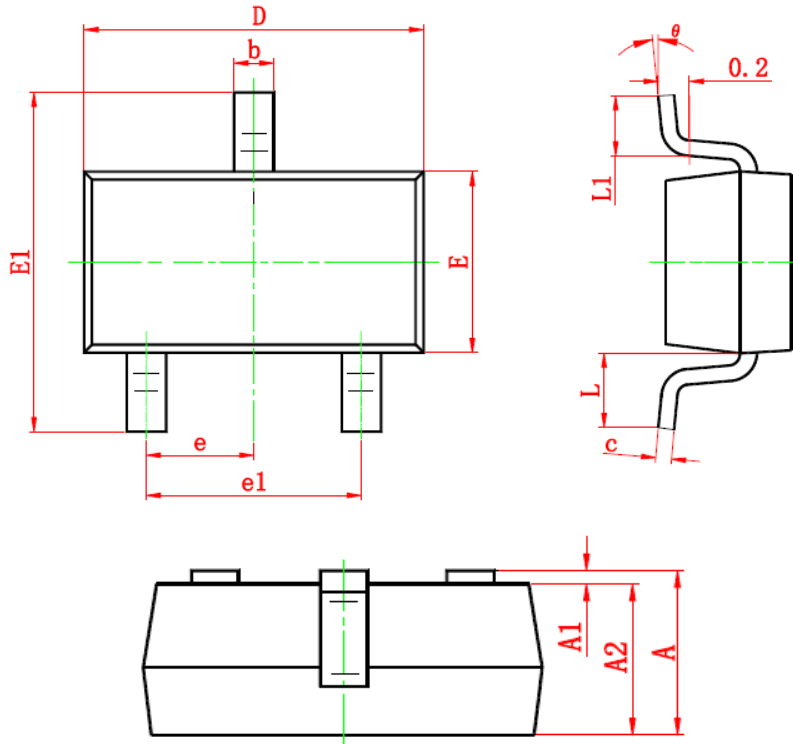


### Diode Recovery Test Circuit & Waveforms



Package Dimension

# SOT-23







Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.100	0.035	0.039
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	6°







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