

Features

- 30V/6.5A,
 $R_{DS(ON)} = 17m\Omega(Typ.)@V_{GS}=10V$
 $R_{DS(ON)} = 26m\Omega(Typ.)@V_{GS}=4.5V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Technology
- Low Capacitance to Minimize Driver Losses
- Fast Switching Speed

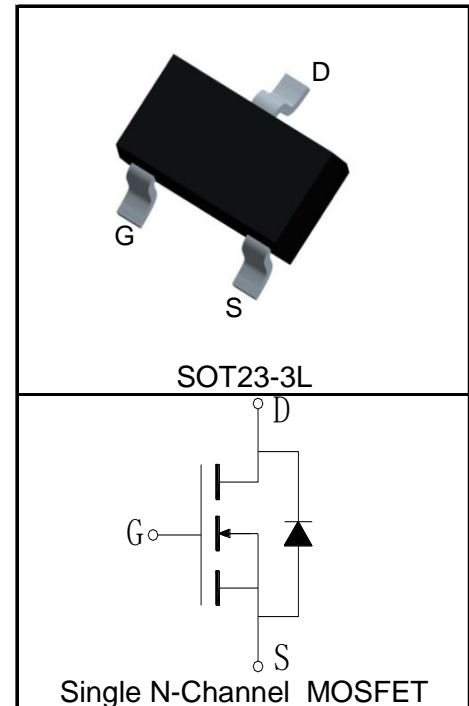
Applications

- Load Switch



Halogen-Free

Pin Description



Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)			
V_{DSS}	Drain-Source Voltage	30	V
V_{GSS}	Gate-Source Voltage	± 20	
T_J	Maximum Junction Temperature	150	$^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
I_S	Diode Continuous Forward Current	$T_A=25^\circ\text{C}$ 1.3	A
Mounted on Large Heat Sink			
$I_{DP}^{①}$	300 μs Pulse Drain Current Tested	$T_A=25^\circ\text{C}$ 26	A
$I_D^{②}$	Continuous Drain Current($V_{GS}=10V$)	$T_A=25^\circ\text{C}$ 6.5	A
		$T_A=70^\circ\text{C}$ 5.2	
P_D	Maximum Power Dissipation	$T_A=25^\circ\text{C}$ 1.3	W
		$T_A=70^\circ\text{C}$ 0.8	
$R_{\theta JL}$	Thermal Resistance-Junction to Lead	60	$^\circ\text{C}/\text{W}$
$R_{\theta JA}^{③}$	Thermal Resistance-Junction to Ambient	100	$^\circ\text{C}/\text{W}$
Drain-Source Avalanche Ratings			
$E_{AS}^{④}$	Avalanche Energy, Single Pulsed	9	mJ

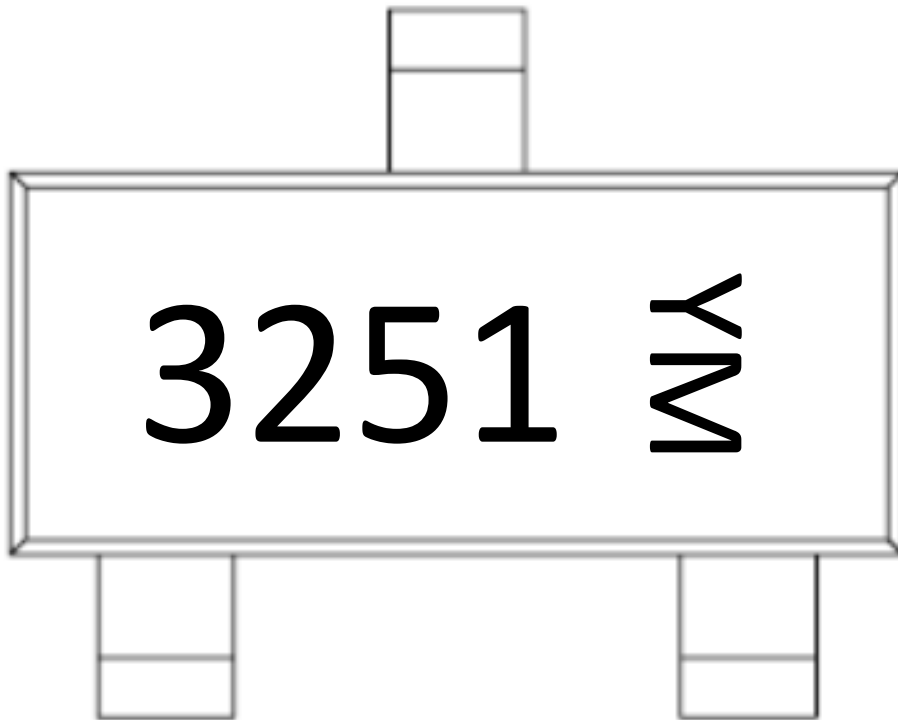
Electrical Characteristics ($T_A=25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	KS3251EAT			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=250\mu A$	30			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=30V, V_{GS}=0V$			1	μA
		$T_J=125^\circ\text{C}$			30	
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.1	1.8	2.3	V
I_{GSS}	Gate Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
$R_{DS(ON)}^{(5)}$	Drain-Source On-state Resistance	$V_{GS}=10V, I_{DS}=6A$		17	20	$m\Omega$
		$V_{GS}=4.5V, I_{DS}=4A$		26	30	$m\Omega$
Diode Characteristics						
$V_{SD}^{(5)}$	Diode Forward Voltage	$I_{SD}=6A, V_{GS}=0V$		0.87	1.2	V
t_{rr}	Reverse Recovery Time	$I_{SD}=6A, di_{SD}/dt=100A/\mu s$		14		ns
Q_{rr}	Reverse Recovery Charge			25		nC
Dynamic Characteristics⁽⁶⁾						
R_G	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$		0.8		Ω
C_{iss}	Input Capacitance	$V_{GS}=0V,$ $V_{DS}=15V,$ Frequency=1.0MHz		385		pF
C_{oss}	Output Capacitance			90		
C_{rss}	Reverse Transfer Capacitance			10		
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=15V, I_{DS}=6A,$ $V_{GEN}=10V, R_G=3\Omega$		5		ns
t_r	Turn-on Rise Time			8		
$t_{d(OFF)}$	Turn-off Delay Time			14		
t_f	Turn-off Fall Time			9		
Gate Charge Characteristics⁽⁶⁾						
Q_g	Total Gate Charge	$V_{DS}=15V, V_{GS}=10V,$ $I_{DS}=6A$		6.6		nC
Q_{gs}	Gate-Source Charge			2		
Q_{gd}	Gate-Drain Charge			2.3		

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature.
 - ③ When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.
 - ④ Limited by $T_{Jmax}, I_{AS}=6A, L=0.5\text{mH}, V_{DD}=24V, R_G=25\Omega$, Starting $T_J=25^\circ\text{C}$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

Ordering and Marking Information

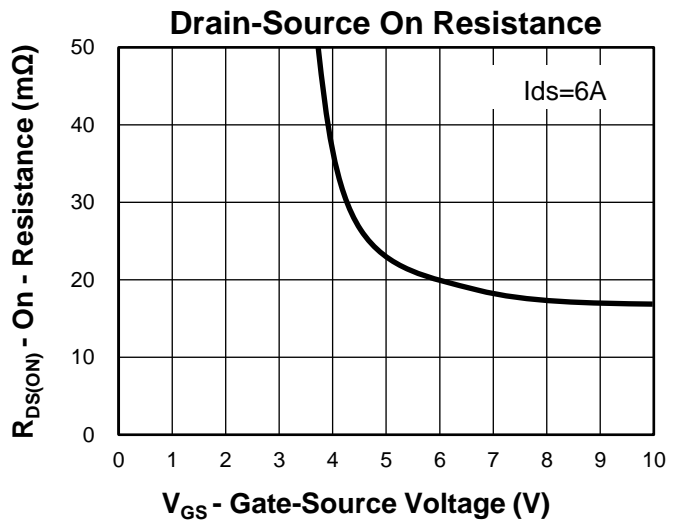
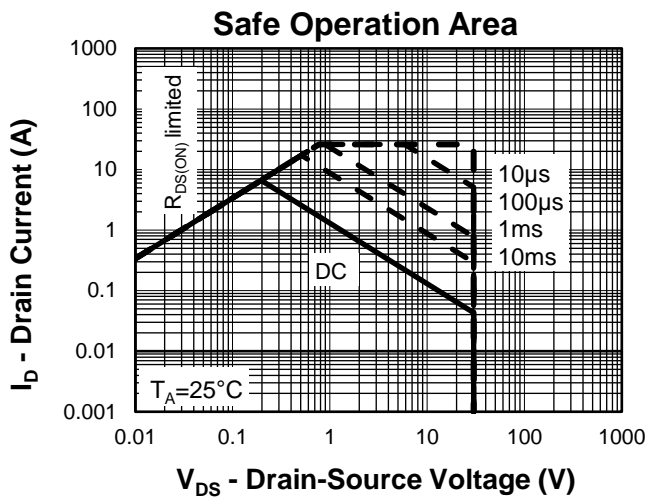
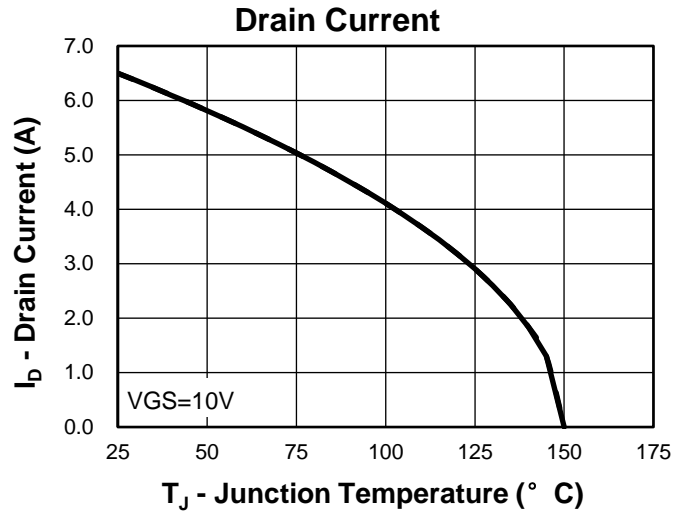
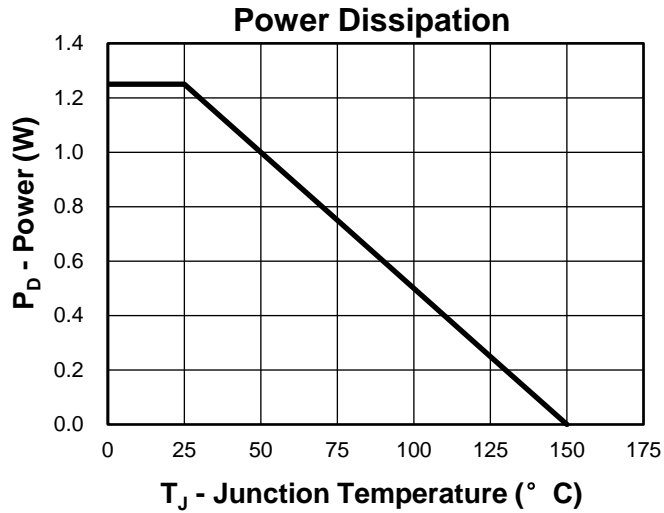
Device	Package	Packaging	Quantity	Reel Size	Tape width
KS3251EAT	SOT23-3L	Tape&Reel	3000	7"	8mm



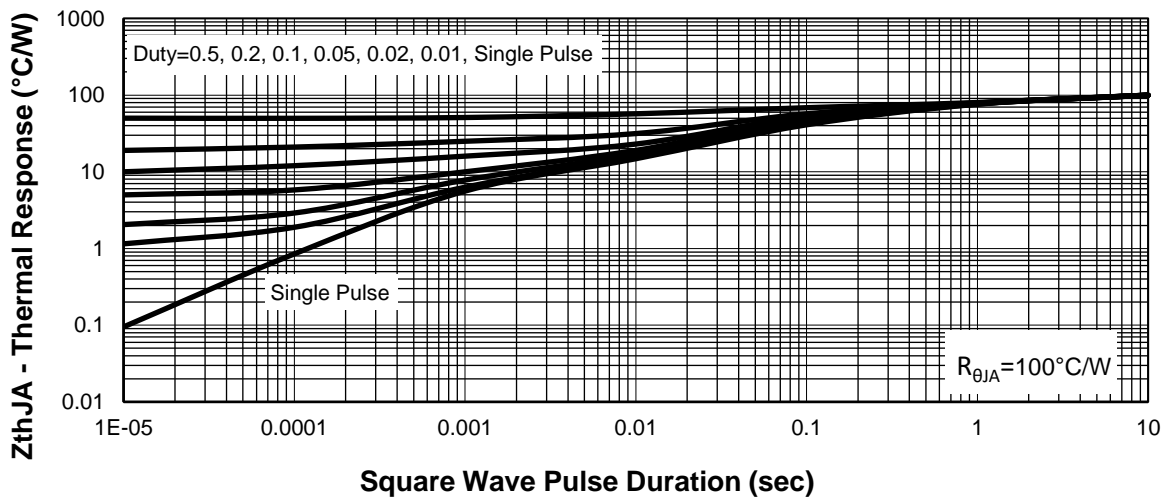
Y =Year,2017-A,2018-B,etc.

M =Month,Jan-1,Feb-2,....Sep-9,Oct-A,Nov-B,Dec-C.

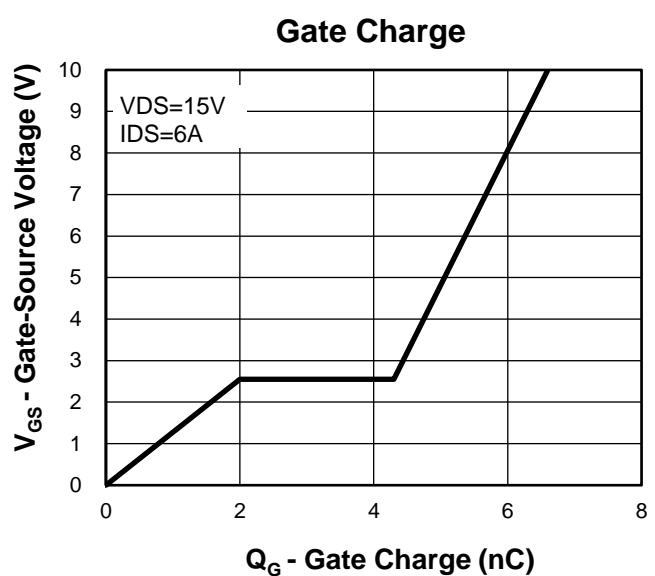
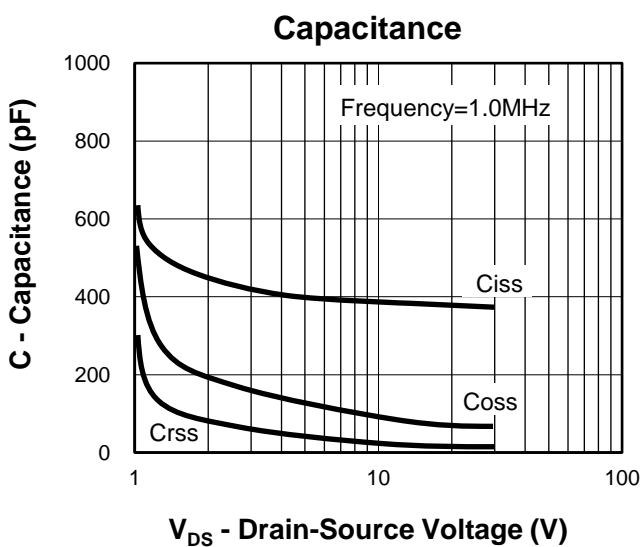
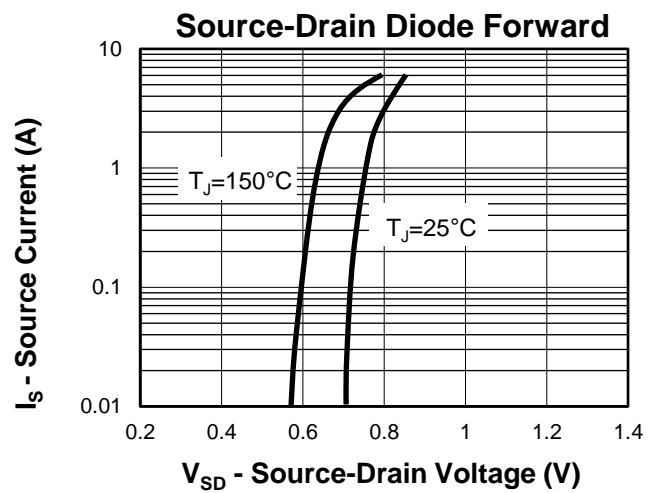
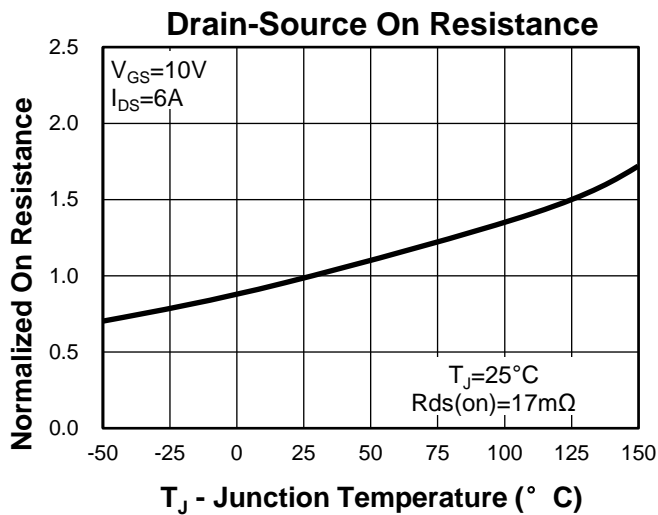
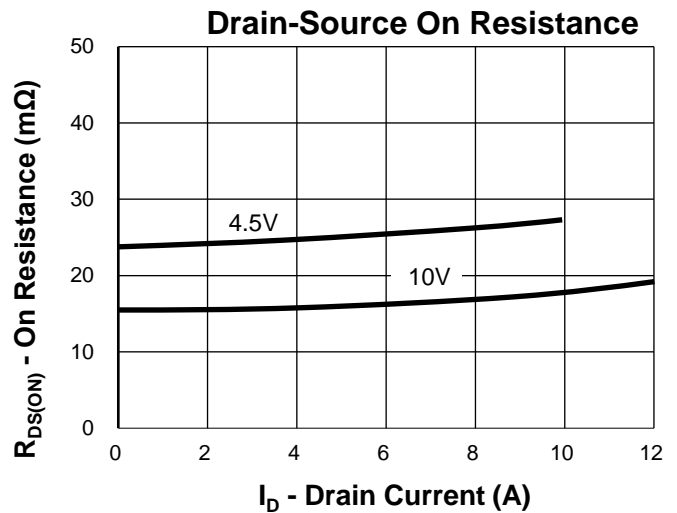
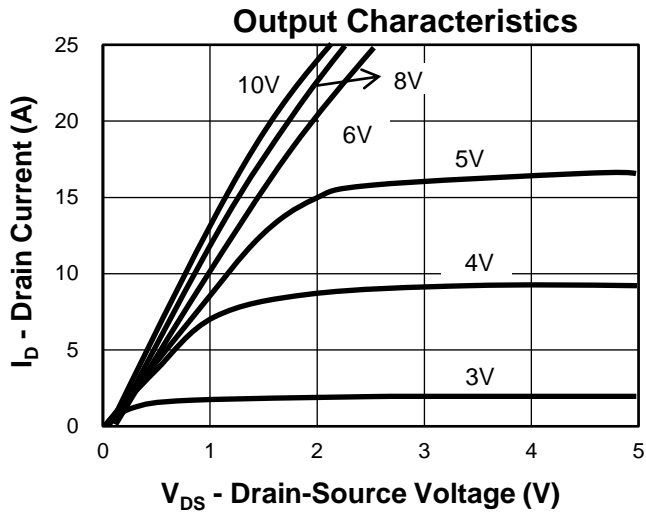
Typical Characteristics

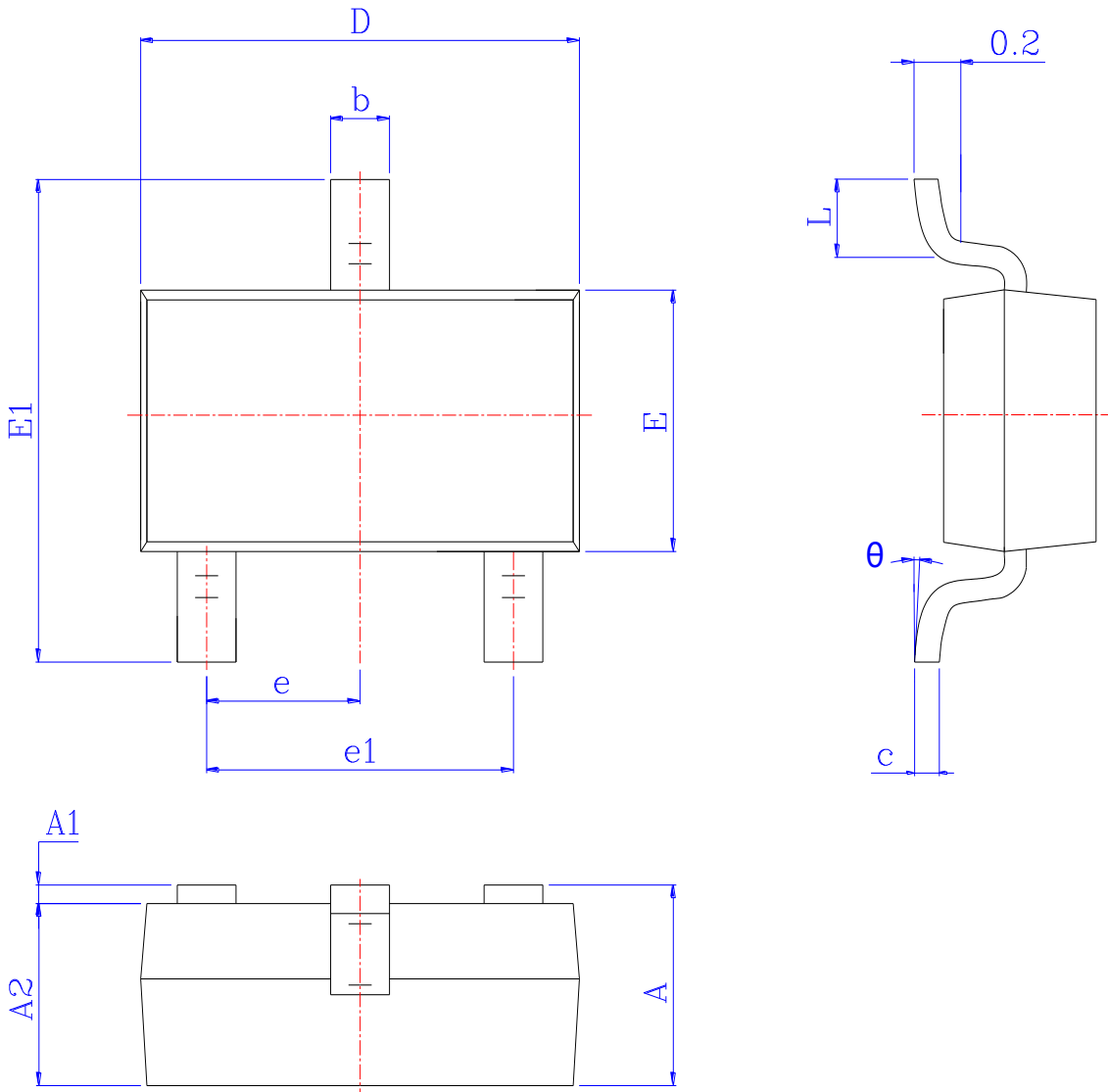


Thermal Transient Impedance



Typical Characteristics



Package Information
SOT23-3L


SYMBOL	MM			INCH		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.950	1.150	1.450	0.037	0.045	0.057
A1	0.000	*	0.150	0.000	*	0.006
A2	0.900	1.100	1.300	0.035	0.043	0.051
b	0.300	0.400	0.500	0.012	0.016	0.020
c	0.080	0.150	0.200	0.003	0.006	0.008
D	2.800	2.925	3.050	0.110	0.115	0.120
E	1.500	1.600	1.750	0.059	0.063	0.069
E1	2.650	2.800	3.000	0.104	0.110	0.118
e	0.950 BSC			0.037 BSC		
e1	1.800	1.900	2.000	0.071	0.075	0.079
L	0.300	0.450	0.600	0.012	0.018	0.024
θ	0°	4°	8°	0°	4°	8°

Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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