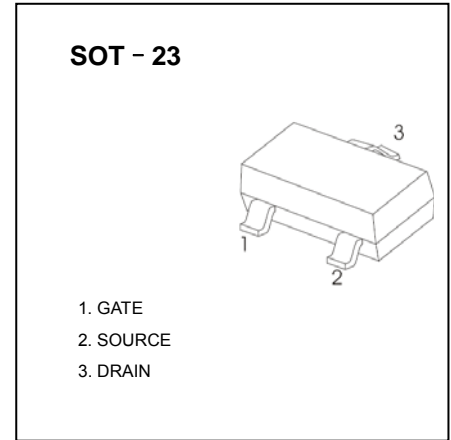
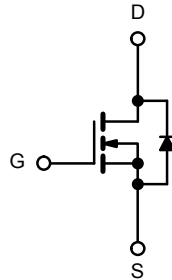


#### ■ Features

- $V_{DS} (V) = 40V$
- $I_D = 5.6 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 36 m\Omega (V_{GS} = 10V)$
- $R_{DS(ON)} < 46 m\Omega (V_{GS} = 4.5V)$



#### Equivalent Circuit



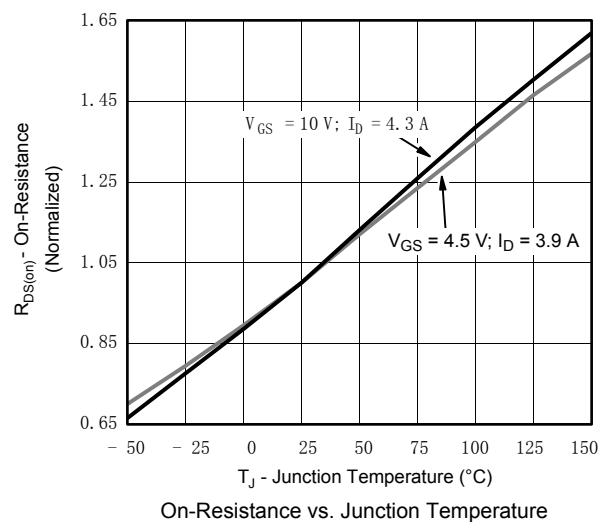
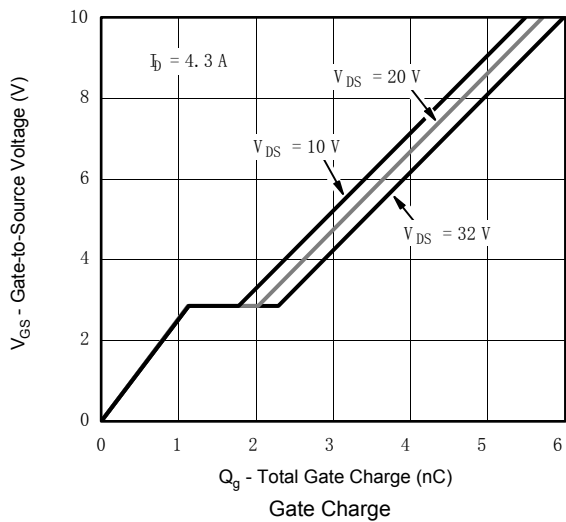
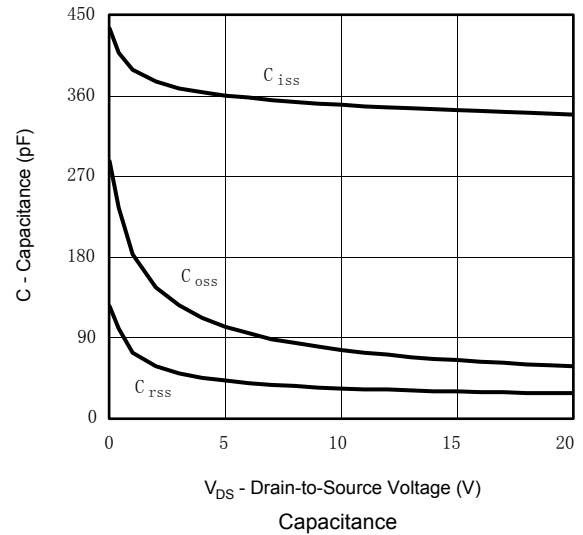
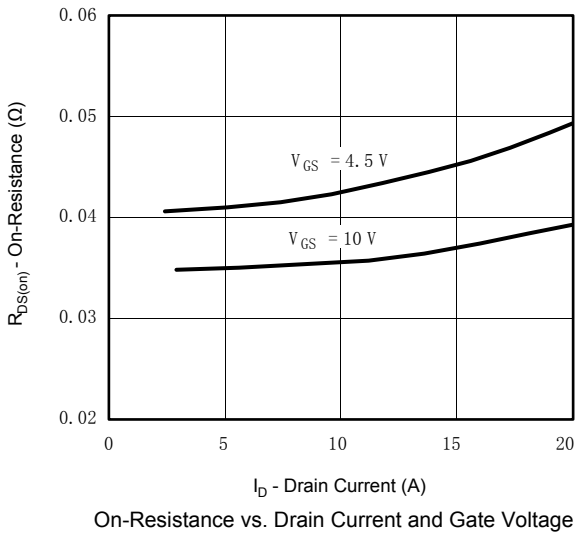
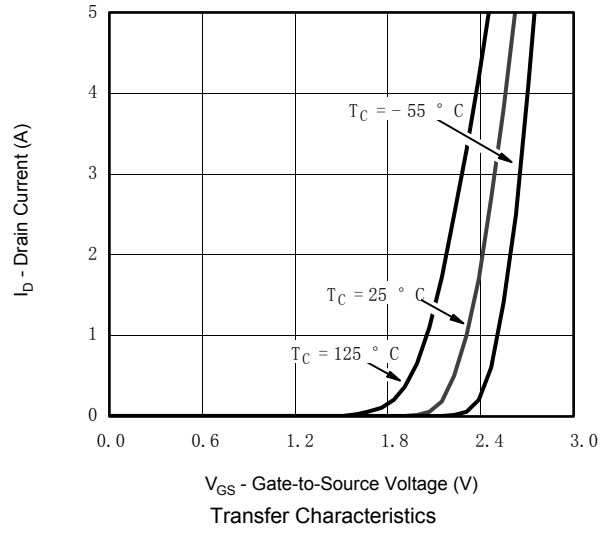
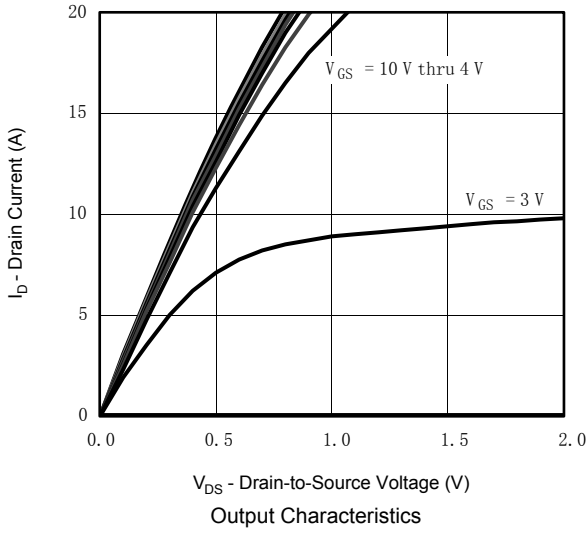
#### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	40	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$		
Continuous Drain Current	$I_D$	$T_c=25^\circ C$	5.6	A
		$T_c=70^\circ C$	4.5	
		$T_a=25^\circ C$	4.3	
		$T_a=70^\circ C$	3.5	
Pulsed Drain Current	$I_{DM}$	20		
Power Dissipation	$P_D$	$T_c=25^\circ C$	2.1	W
		$T_c=70^\circ C$	1.3	
		$T_a=25^\circ C$	1.25	
		$T_a=70^\circ C$	0.8	
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	100	$^\circ C/W$	
Thermal Resistance.Junction- to-Foot	$R_{thJF}$	60		
Junction Temperature	$T_J$	150	$^\circ C$	
Storage Temperature Range	$T_{stg}$	-55 to 150		

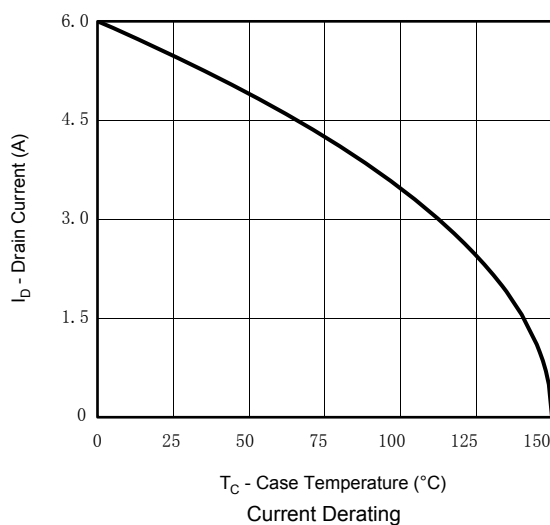
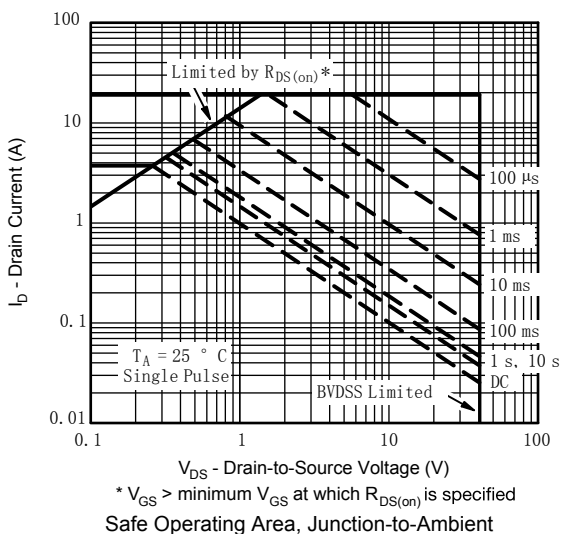
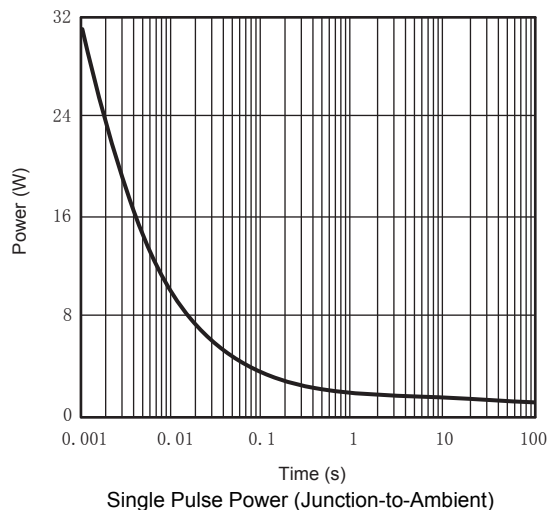
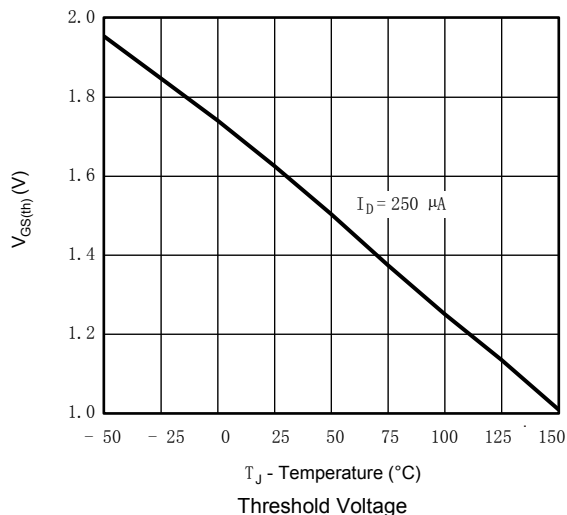
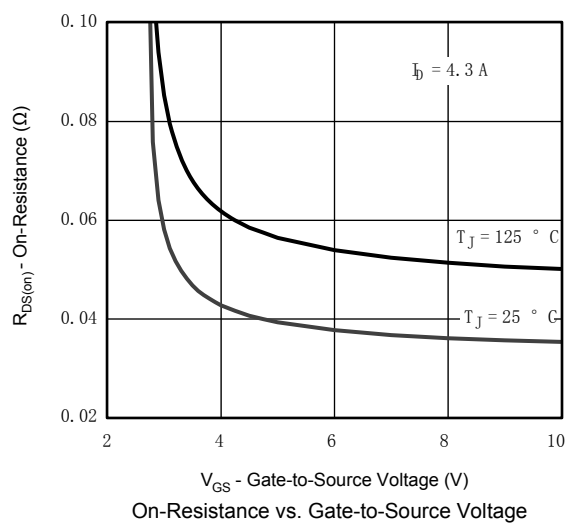
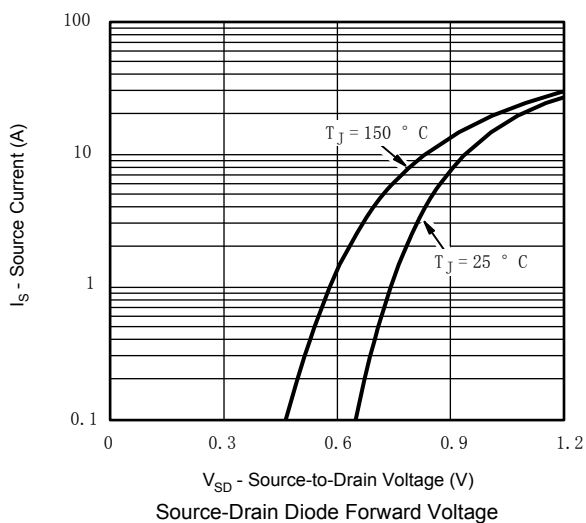
## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =250 μA, V <sub>GS</sub> =0V	40			V	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =40V, V <sub>GS</sub> =0V			1	μA	
		V <sub>DS</sub> =40V, V <sub>GS</sub> =0V, T <sub>J</sub> =70°C			10		
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA	1.2		2.5	V	
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =4.7A			36	mΩ	
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =3.9A			46		
On State Drain Current	I <sub>D(ON)</sub>	V <sub>DS</sub> ≥5V, V <sub>GS</sub> =10V	20			A	
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =20V, I <sub>D</sub> =4.3A		17		S	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =20V, f=1MHz		340		pF	
Output Capacitance	C <sub>oss</sub>			60			
Reverse Transfer Capacitance	C <sub>rss</sub>			30			
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, f=1MHz	0.6		6.6	Ω	
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =20V, V <sub>DS</sub> =10V, I <sub>D</sub> =4.3A		5.8	9	nC	
		V <sub>GS</sub> =20V, V <sub>DS</sub> =4.5V, I <sub>D</sub> =4.3A		2.9	6		
Gate Source Charge	Q <sub>gs</sub>	V <sub>GS</sub> =20V, V <sub>DS</sub> =4.5V, I <sub>D</sub> =4.3A		1.1		nC	
Gate Drain Charge	Q <sub>gd</sub>			0.9			
Turn-On DelayTime	t <sub>d(on)</sub>		V <sub>DD</sub> = 20V, R <sub>L</sub> = 5.7Ω I <sub>D</sub> =3.5A, V <sub>GEN</sub> = 4.5V, R <sub>G</sub> = 1Ω		12		20
Turn-On Rise Time	t <sub>r</sub>			50	75		
Turn-Off DelayTime	t <sub>d(off)</sub>			10	20		
Turn-Off Fall Time	t <sub>f</sub>			8	16		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>DD</sub> = 20V, R <sub>L</sub> = 5.7Ω I <sub>D</sub> =3.5A, V <sub>GEN</sub> = 10V, R <sub>G</sub> = 1Ω			7	14	ns
Turn-On Rise Time	t <sub>r</sub>			20	30		
Turn-Off DelayTime	t <sub>d(off)</sub>			14	21		
Turn-Off Fall Time	t <sub>f</sub>			8	16		
Body Diode Reverse Recovery Time	t <sub>rr</sub>		I <sub>F</sub> =3.5A, di/dt=100A/μs, T <sub>J</sub> =25°C		15	23	
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			7	14		
Reverse Recovery Fall Time	t <sub>a</sub>			11		ns	
Reverse Recovery Rise Time	t <sub>b</sub>			4			
Maximum Body-Diode Continuous Current	I <sub>S</sub>	T <sub>c</sub> =25°C				1.75	A
Pulse Diode Forward Current	I <sub>SM</sub>				20		
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =3.5A, V <sub>GS</sub> =0V			1.2	V	

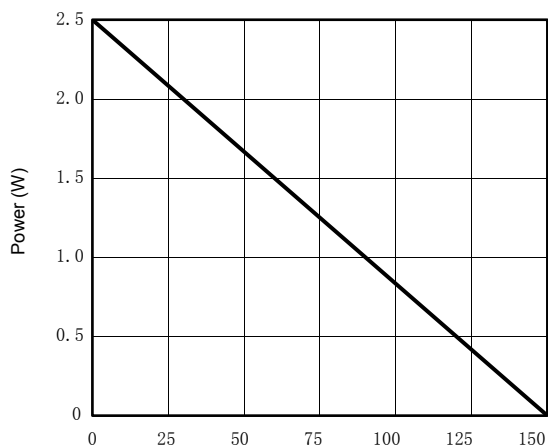
■ Typical Characteristics



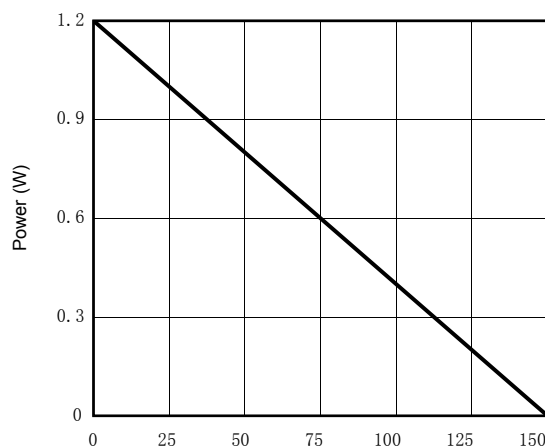
#### ■ Typical Characteristics



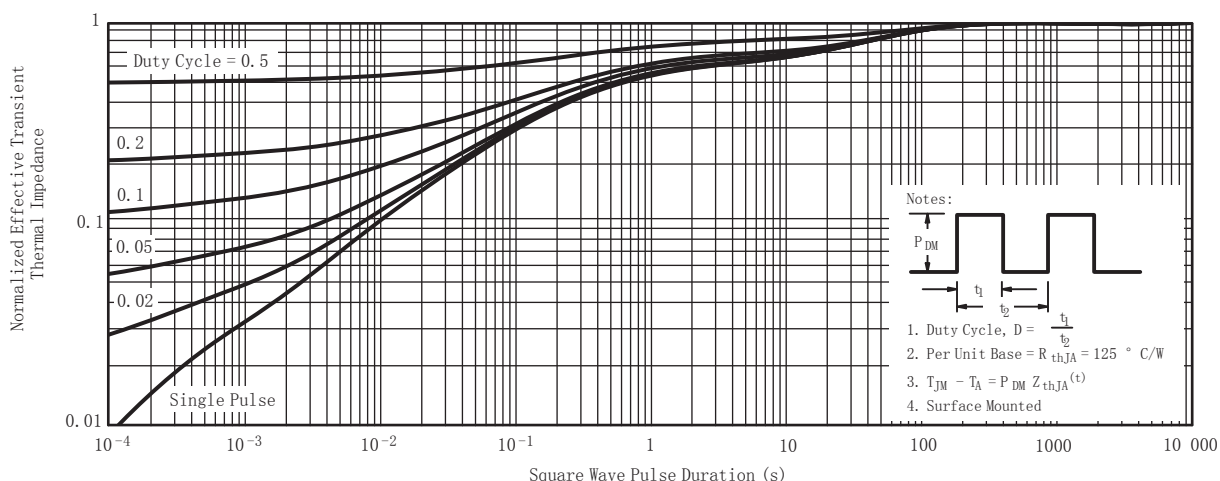
#### ■ Typical Characteristics



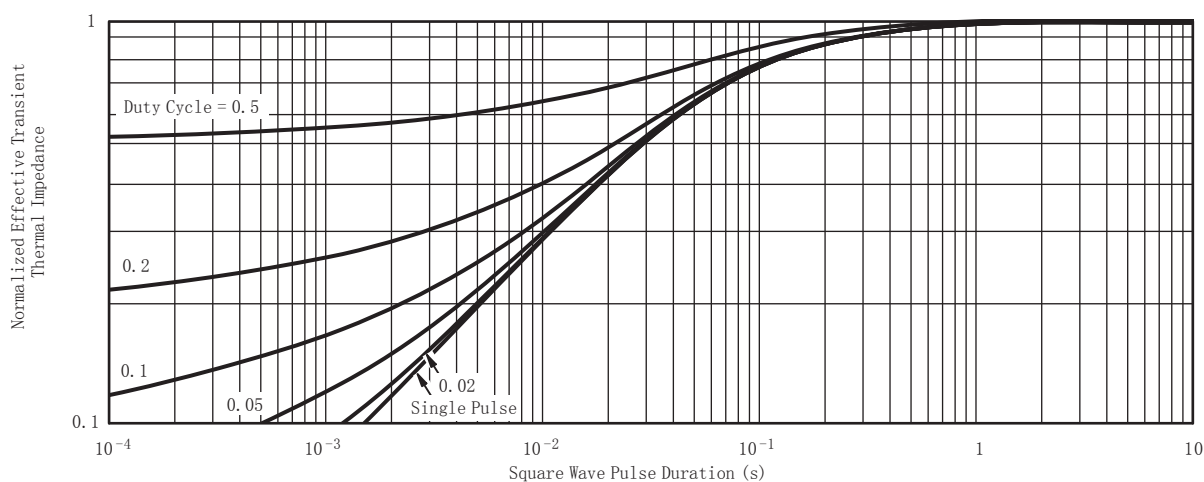
$T_C$  - Case Temperature (°C)  
Power Derating, Junction-to-Foot



$T_A$  - Ambient Temperature (°C)  
Power Derating, Junction-to-Ambient

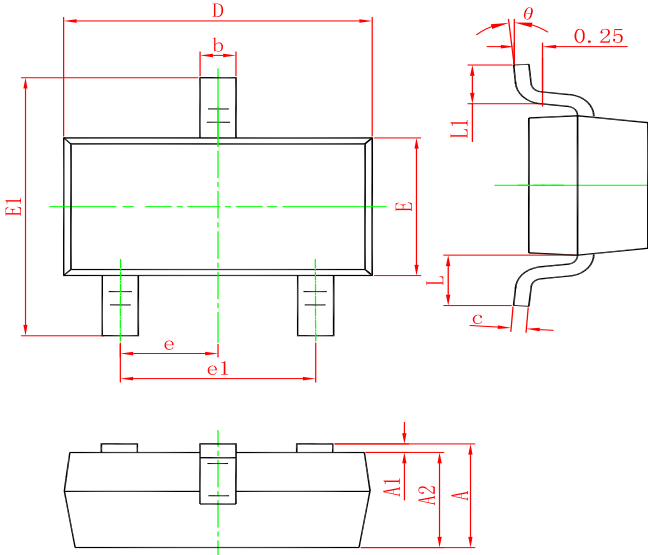


Normalized Thermal Transient Impedance, Junction-to-Ambient



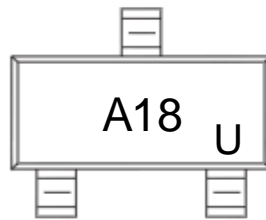
Normalized Thermal Transient Impedance, Junction-to-Foot

SOT-23 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
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
$\theta$	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
SI2318A	SOT-23	3000	Tape and reel