

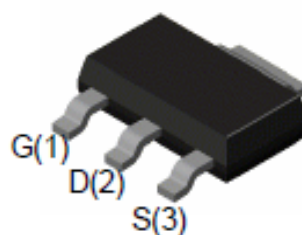
Features

- -30V/-5.5A,
 $R_{DS(ON)} = 38m\Omega$ (Typ.) @ $V_{GS} = -10V$
 $R_{DS(ON)} = 55m\Omega$ (Typ.) @ $V_{GS} = -4.5V$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Available

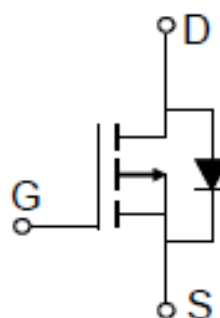
Applications

- Power Management.

Pin Description



SOT-223



P-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		-30	V
V _{GSS}	Gate-Source Voltage		±20	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _A =25°C	-3.1	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _A =25°C	-22 ^①	A
I _D	Continuous Drain Current	T _A =25°C	-5.5	A
		T _A =70°C	-4.5	
P _D	Maximum Power Dissipation	T _A =25°C	2.5	W
		T _A =70°C	1.6	
R _{θJA} ^②	Thermal Resistance-Junction to Ambient		50	°C/W

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

Symbol	Parameter	Test Condition	RU30P5D			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V			-1	μA
		T _J =85°C			-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-1	-1.8	-2.5	V
I _{GSS}	Gate Leakage Current	V _{GS} =±20V, V _{DS} =0V			±100	nA
R _{DS(ON)} ③	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-5.2A		38	50	mΩ
		V _{GS} =-4.5V, I _{DS} =-2A		55	90	mΩ
Diode Characteristics						
V _{SD} ③	Diode Forward Voltage	I _{SD} =-2A, V _{GS} =0V			-1	V
t _{rr}	Reverse Recovery Time	I _{SD} =-5.5A, dI _{SD} /dt=100A/μs		12		ns
Q _{rr}	Reverse Recovery Charge			7		nC
Dynamic Characteristics ④						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		1.1		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz		550		pF
C _{oss}	Output Capacitance			90		
C _{rss}	Reverse Transfer Capacitance			50		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-15V, R _L =2.7Ω, I _{DS} =-5.5A, V _{GEN} =-10V, R _G =6Ω		8		ns
t _r	Turn-on Rise Time			10		
t _{d(OFF)}	Turn-off Delay Time			28		
t _f	Turn-off Fall Time			10		
Gate Charge Characteristics ④						
Q _g	Total Gate Charge	V _{DS} =-24V, V _{GS} =-10V, I _{DS} =-5.5A		11	14	nC
Q _{gs}	Gate-Source Charge			2		
Q _{gd}	Gate-Drain Charge			3		

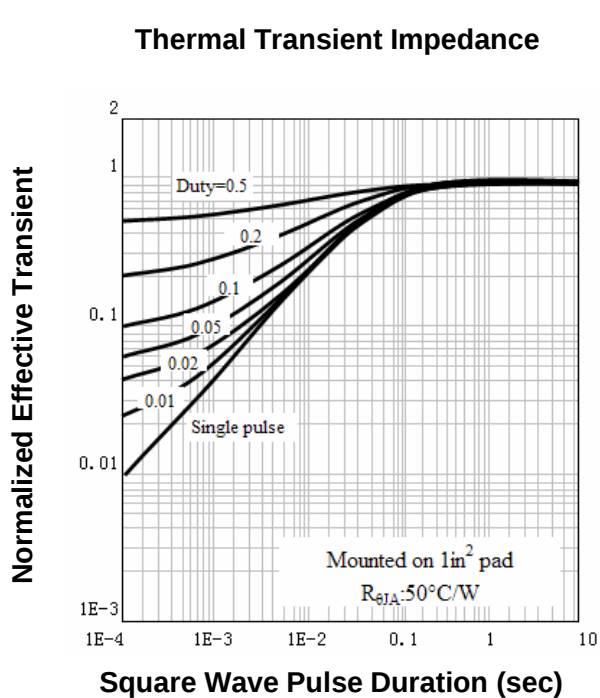
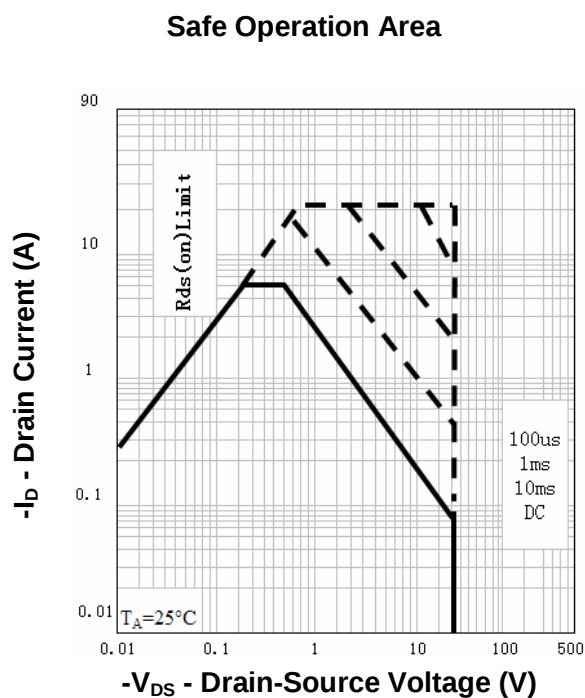
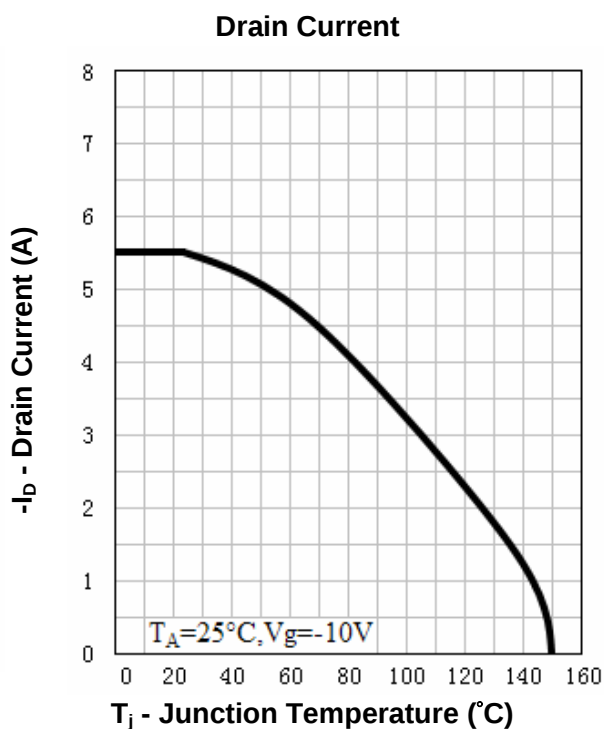
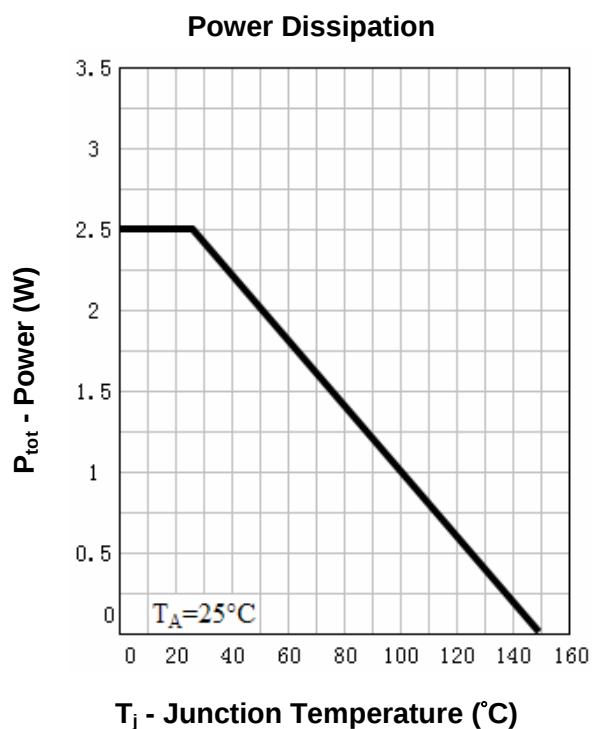
Notes: ① Pulse width limited by safe operating area.

② 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.

③ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

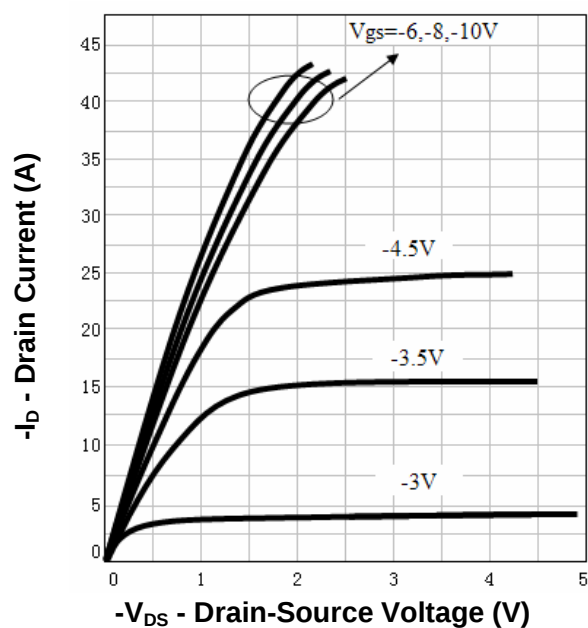
④ Guaranteed by design, not subject to production testing.

Typical Characteristics

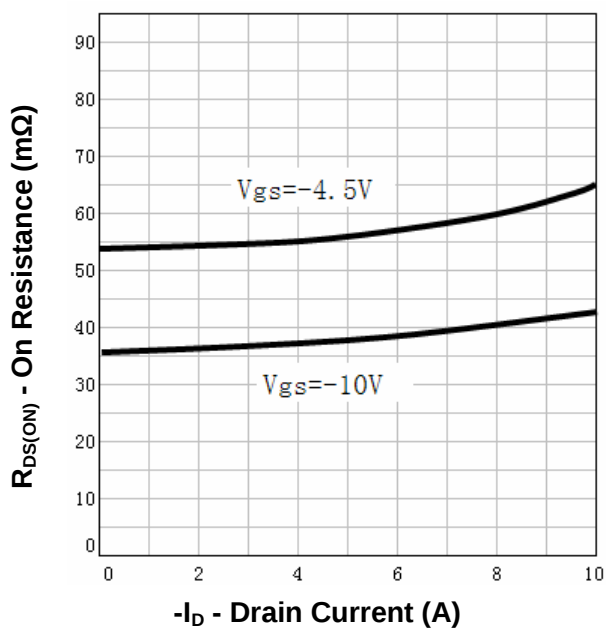


Typical Characteristics

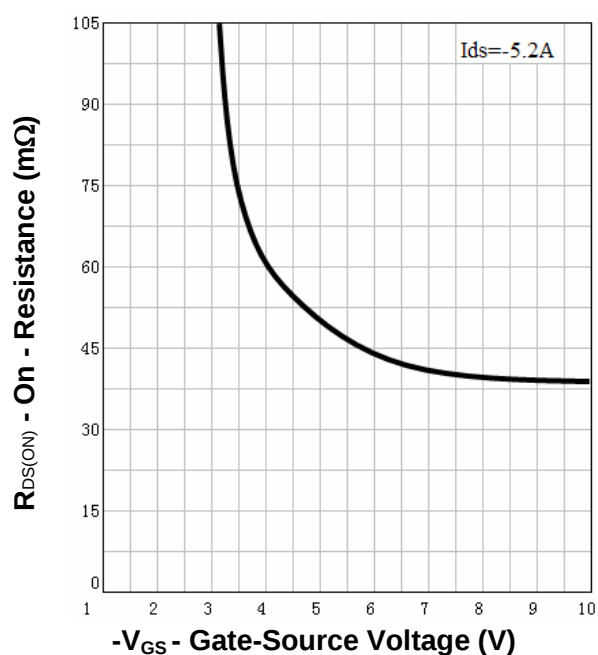
Output Characteristics



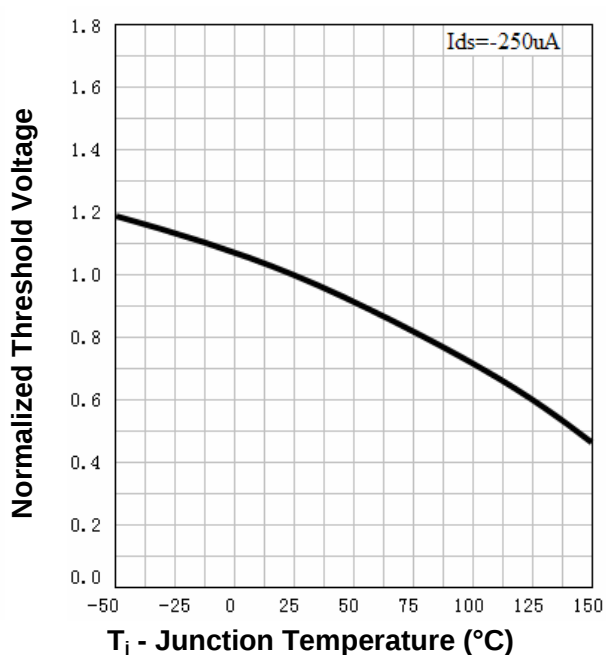
Drain-Source On Resistance



Drain-Source On Resistance

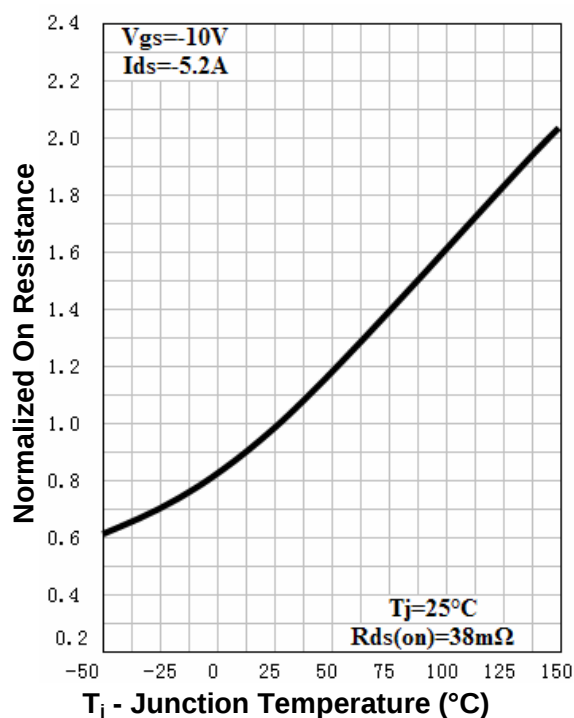


Gate Threshold Voltage

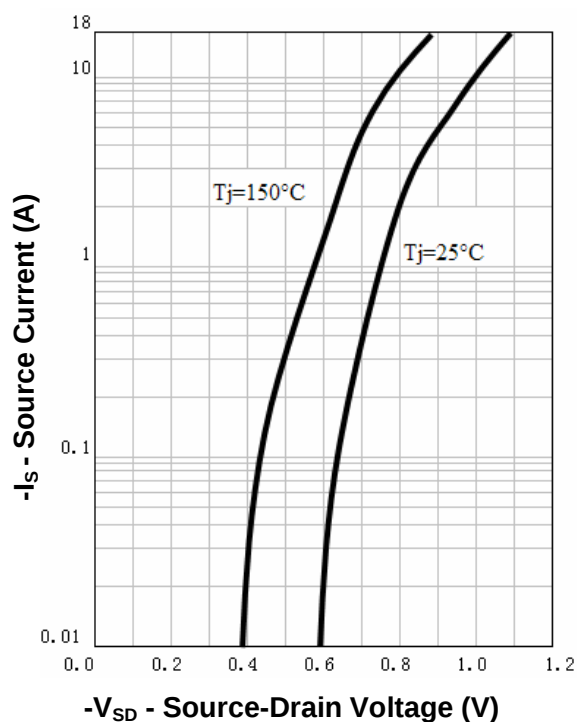


Typical Characteristics

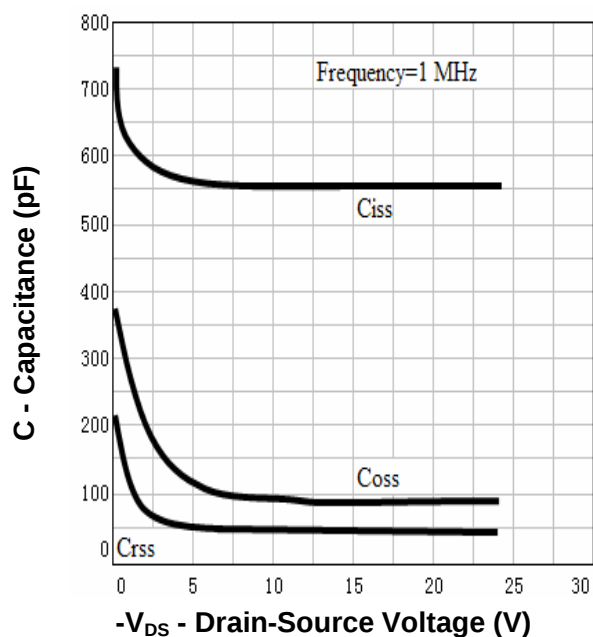
Drain-Source On Resistance



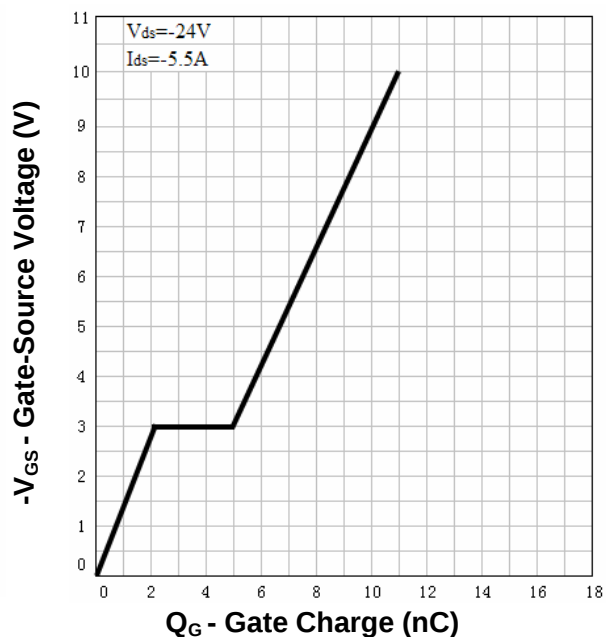
Source-Drain Diode Forward



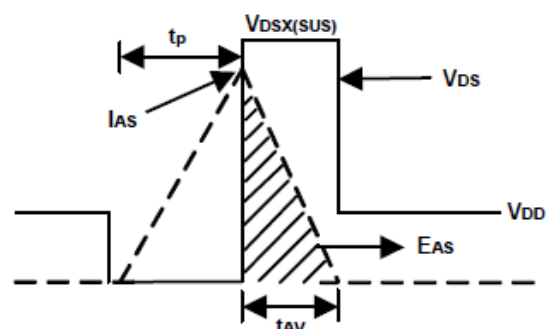
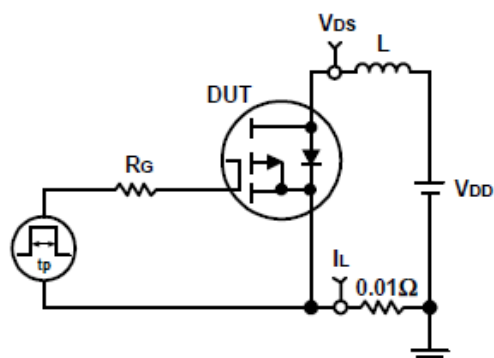
Capacitance



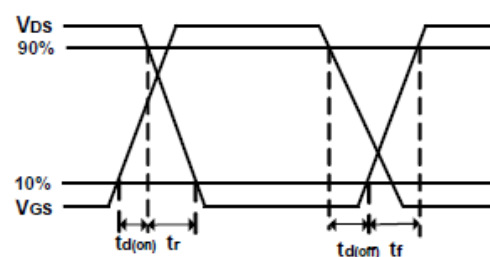
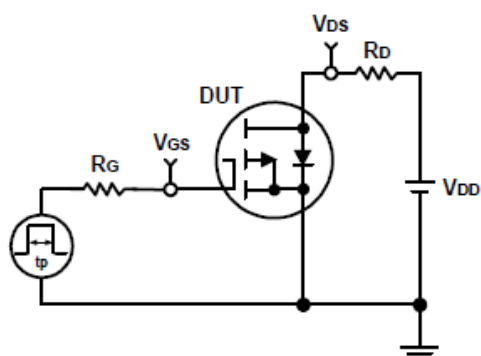
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Ordering and Marking Information

RU30P5

Package (Available)

D : SOT-223

Operating Temperature Range

C : -55 to 150 °C

Assembly Material

G : Green & Lead Free

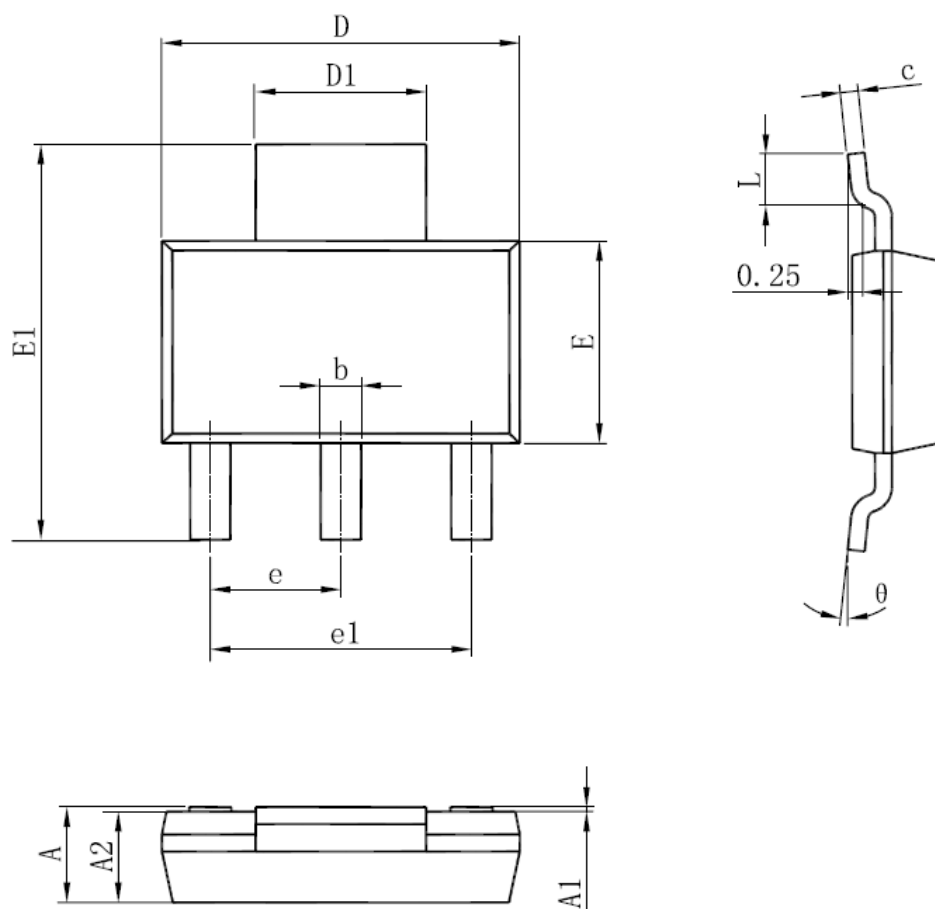
Packaging

T : TUBE

TR : Tape & Reel

Package Information

SOT-223



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
A	1.520	1.800	0.060	0.071	E	3.300	3.700	0.130	0.146
A1	0.000	0.100	0.000	0.004	E1	6.830	7.070	0.269	0.278
A2	1.500	1.700	0.059	0.067	e	2.300(BSC)		0.091(BSC)	
b	0.660	0.820	0.026	0.032	e1	4.500	4.700	0.177	0.185
c	0.250	0.350	0.010	0.014	L	0.900	1.150	0.035	0.045
D	6.200	6.400	0.244	0.252	θ	0°	10°	0°	10°
D1	2.900	3.100	0.114	0.122					

ALL DIMENSIONS REFER TO JEDEC STANDARD
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

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