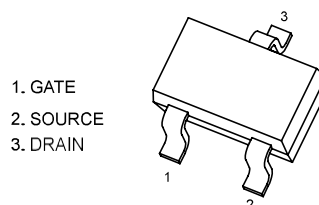


## SOT-323 Plastic-Encapsulate MOSFETS

### Features:

- Surface Mount Package
- High Density Cell Design for Extremely Low  $R_{DS(ON)}$
- Voltage Controlled Small Signal Switch
- Rugged and Reliable

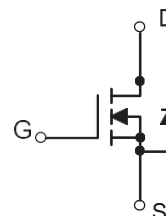
SOT-323



### Applications:

- Small Servo Motor Controls
- Power MOSFET Gate Drivers
- Switching Application

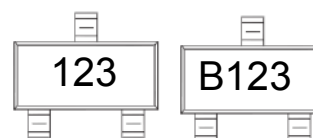
### Equivalent Circuit



### N Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
100 V	6Ω@10V	0.17A
	10Ω@4.5V	

### MARKING



### ABSOLUTE MAXIMUM RATINGS ( $T_a=25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Value	Unit
<b>N-MOSFET</b>			
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current (note 1)	$I_D$	0.17	A
Pulsed Drain Current ( $t_p=10\mu s$ )	$I_{DM}$	0.68	A
Continous Source-Drain Diode Current	$I_S$	0.17	A
Power Dissipation	$P_D$	0.35	W
Thermal Resistance from Junction to Ambient (note 1)	$R_{\theta JA}$	357	°C/W
Operation Junction and Storage Temperature Range	$T_J, T_{STG}$	-55~+150	°C
Lead Temperature for Soldering Purposes(1/8" from case for 10 s)	$T_L$	260	°C

## MOSFET ELECTRICAL CHARACTERISTICS

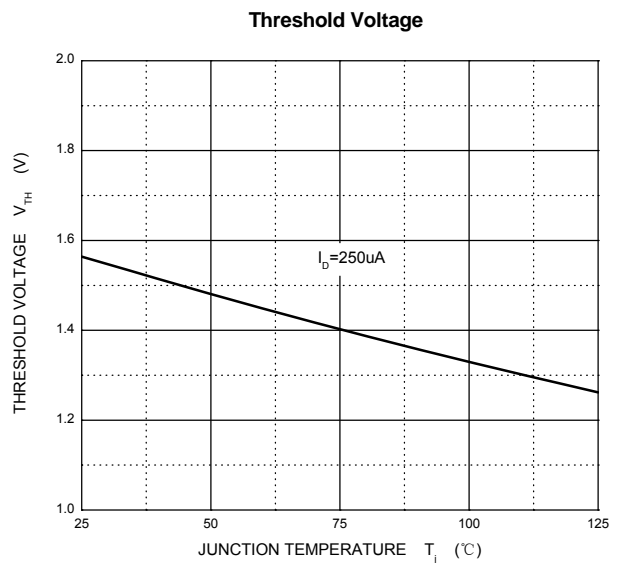
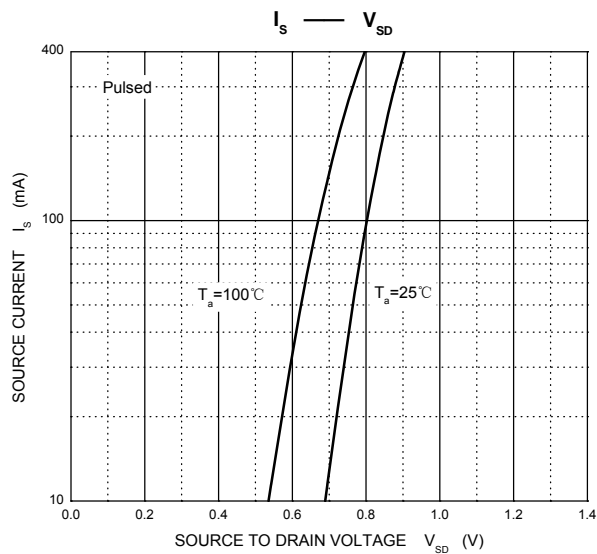
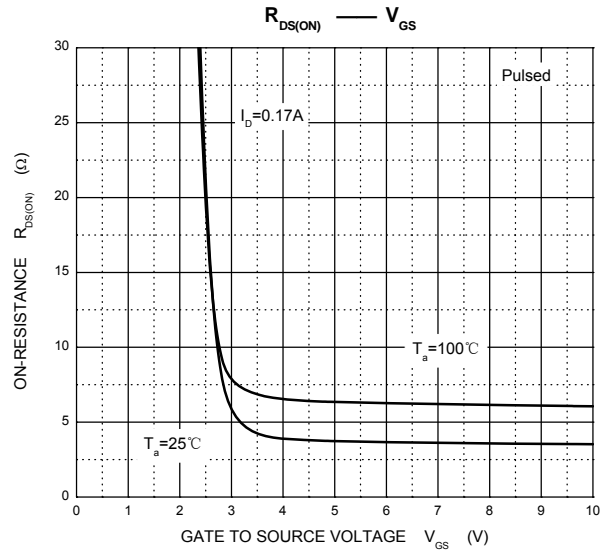
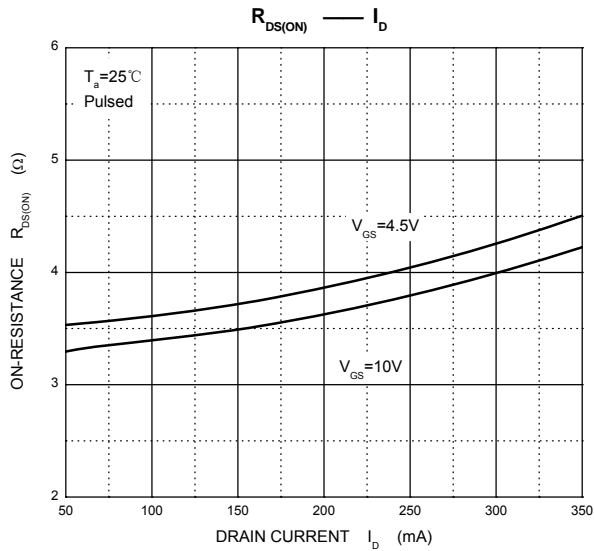
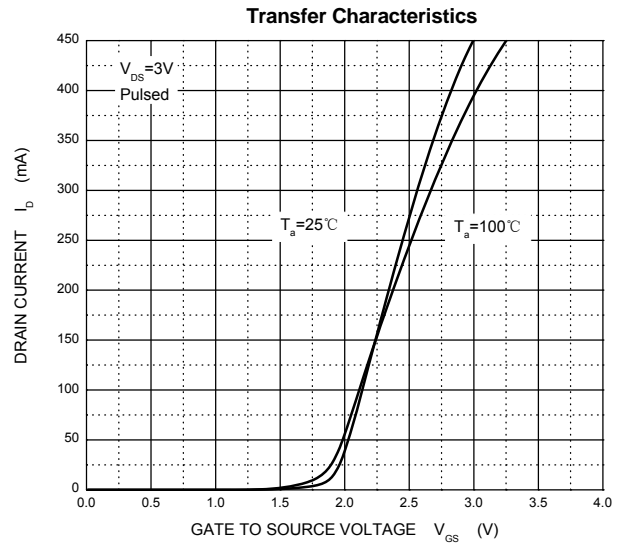
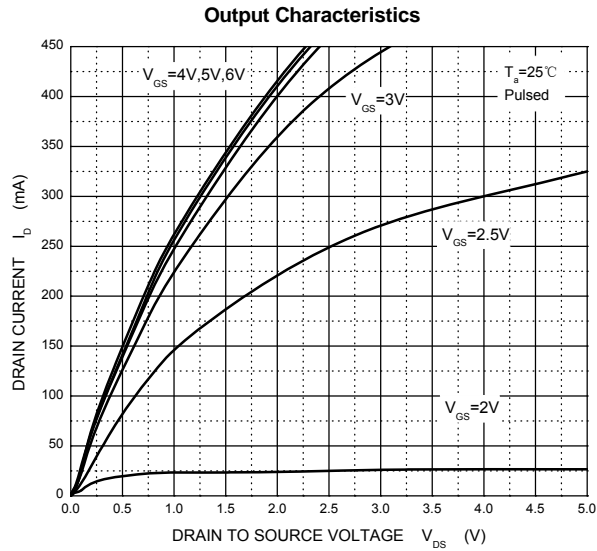
$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC CHARACTERISTICS</b>						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Zero gate voltage drain current	$I_{DSS}$	$V_{DS} = 100V, V_{GS} = 0V$			1	$\mu A$
		$V_{DS} = 20V, V_{GS} = 0V$			10	nA
Gate-body leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 50$	nA
Gate threshold voltage (note 2)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.6	2	V
Drain-source on-resistance(note 2)	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 0.17A$		3.8	10	$\Omega$
		$V_{GS} = 10V, I_D = 0.17A$		3.5	6	$\Omega$
Forward transconductance(note 2)	$g_{FS}$	$V_{DS} = 10V, I_D = 170mA$	80			mS
Diode forward voltage	$V_{SD}$	$I_S = 340mA, V_{GS} = 0V$			1.3	V
<b>DYNAMIC CHARACTERISTICS (note 4)</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 25V, V_{GS} = 0V, f = 1MHz$		29	60	pF
Output Capacitance	$C_{oss}$			10	15	pF
Reverse Transfer Capacitance	$C_{rss}$			2	6	pF
<b>SWITCHING CHARACTERISTICS (note 3,4)</b>						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 10V, V_{DD} = 30V, I_D = 0.28A, R_{GEN} = 50\ \Omega$			8	ns
Turn-on rise time	$t_r$				8	ns
Turn-off delay time	$t_{d(off)}$				13	ns
Turn-off fall time	$t_f$				16	ns
Total Gate Charge	$Q_g$	$V_{DS} = 10V, I_D = 0.22A, V_{GS} = 10V$		1.4	2	nC
Gate-Source Charge	$Q_{gs}$			0.15	0.25	nC
Gate-Drain Charge	$Q_{gd}$			0.2	0.4	nC

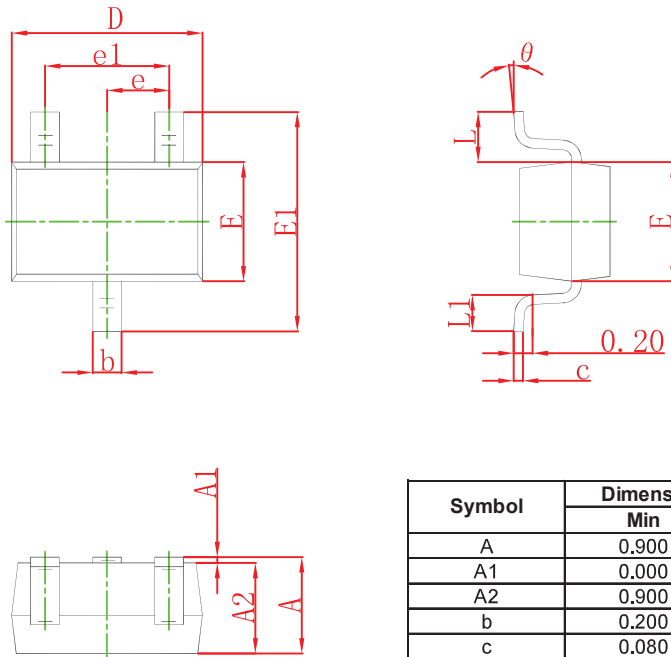
### Notes :

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. Pulse Test : Pulse width=300 $\mu s$ , duty cycle $\leq 2\%$ .
3. Switching characteristics are independent of operating junction temperature.
4. Granted by design, not subject to producing.

**Typical Characteristics**

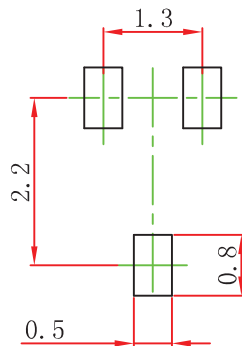


**SOT-323 Package Outline Dimensions**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
K	0°	8°	0°	8°

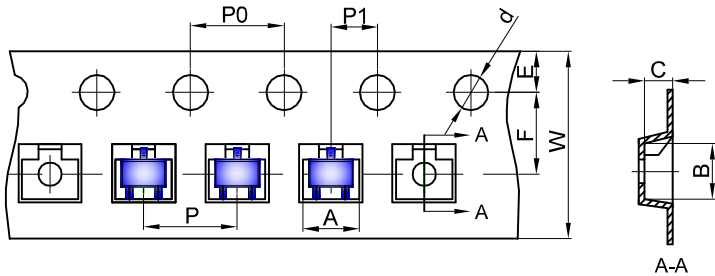
**SOT-323 Suggested Pad Layout**



Note:  
 1. Controlling dimension: in millimeters.  
 2. General tolerance: ±0.05mm.  
 3. The pad layout is for reference purposes only.

**SOT-323 Tape and Reel**

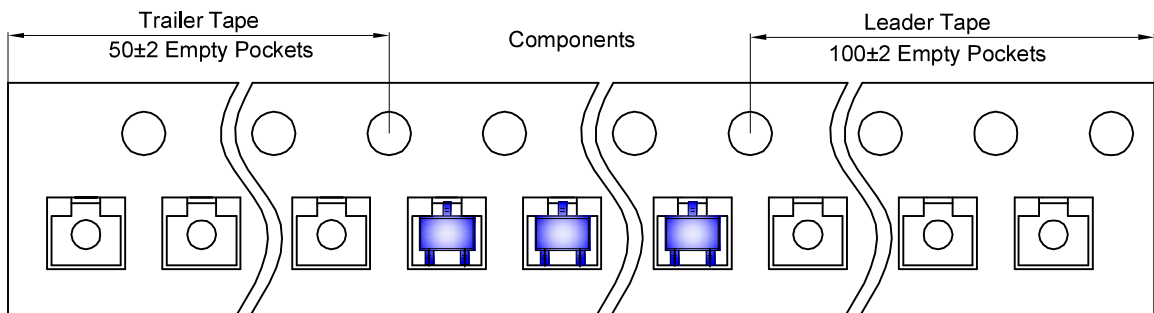
**SOT-323 Embossed Carrier Tape**



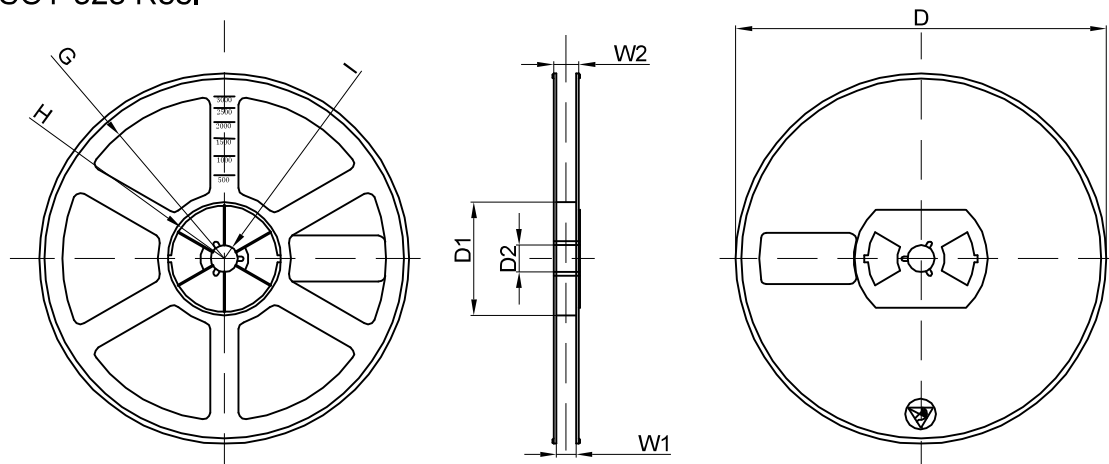
**Packaging Description:**  
 SOT-323 parts are shipped in tape. The carrier tape is made from a dissipative (carbon filled) polycarbonate resin. The cover tape is a multilayer film (Heat Activated Adhesive in nature) primarily composed of polyester film, adhesive layer, sealant, and anti-static sprayed agent. These reeled parts in standard option are shipped with 3,000 units per 7" or 17.8cm diameter reel. The reels are clear in color and is made of polystyrene plastic (anti-static coated).

Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-323	2.25	2.55	1.19	Ø1.55	1.75	3.50	4.00	4.00	2.00	8.00

**SOT-323 Tape Leader and Trailer**



**SOT-323 Reel**



Dimensions are in millimeter								
Reel Option	D	D1	D2	G	H	I	W1	W2
7" Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50	12.30

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	30,000 pcs	203×203×195	120,000 pcs	438×438×220	