

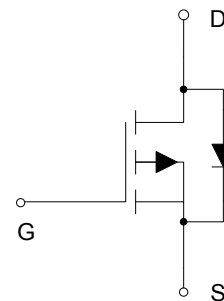
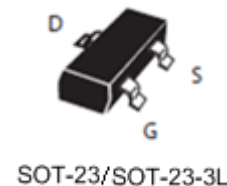
Features

- -30V/-4A
- $R_{DS(ON)} = 46m\Omega(Typ.) @ V_{GS} = -10V$
- $R_{DS(ON)} = 55m\Omega(Typ.) @ V_{GS} = -4.5V$
- $R_{DS(ON)} = 79m\Omega(Typ.) @ V_{GS} = -2.5V$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Applications

- Power Management in Notebook
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

Pin Description



Ordering and Marking Information

HX3401: Package Code	Package Code A: SOT-23-3L
HX3401: A12T	

Note: Hxsemi lead-free products contain molding compounds/die attach materials and 100% matte tin plate termination finish; which are fully compliant with RoHS. Hxsemi lead-free products meet or exceed the lead-free requirements of IPC/JEDEC J-STD-020C for MSL classification at lead-free peak reflow temperature. Hxsemi defines "Green" to mean lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500ppm by weight).

Hxsemi reserves the right to make changes to improve reliability or manufacturability without notice, and advise customers to obtain the latest version of relevant information to verify before placing orders.

Absolute Maximum Ratings (TA = 25°C, unless otherwise noted)

SYMBOL	PARAMETER	RATING	UNITS
V _{DS}	Drain-Source Voltage	-30	V
V _{GS}	Gate-Source Voltage	±12	V
I _D ^a	Maximum Drain Current-Continuous	V _{GS} =-10V	A
I _{DM} ^b	Maximum Drain Current – Pulsed		A
I _S [*]	Diode Continuous Forward Current	-2	A
P _D ^a	Maximum Power Dissipation	T _A =25°C	0.83
		T _A =100°C	0.3
T _J , T _{STG}	Junction and Storage Temperature Range	-55 to 150	°C
R _{θJA} ^a	Thermal Resistance – Junction to Ambient	150	°C/W

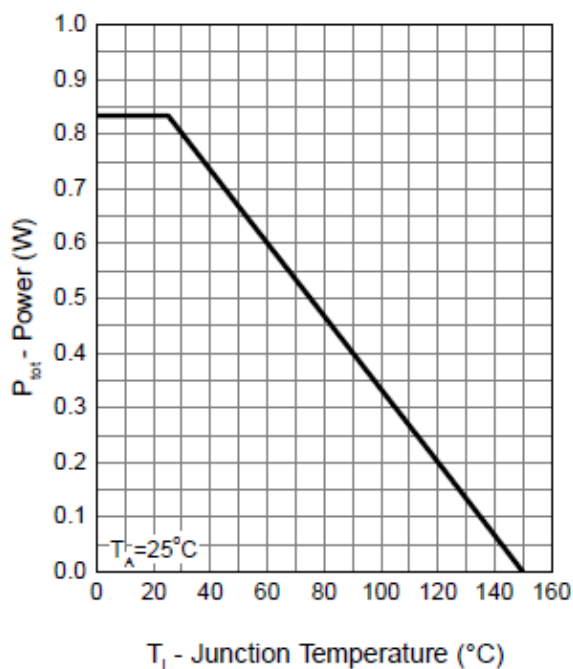
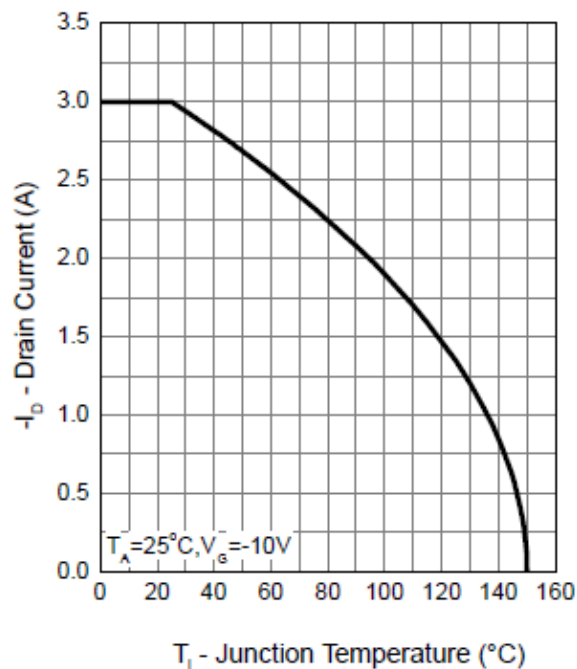
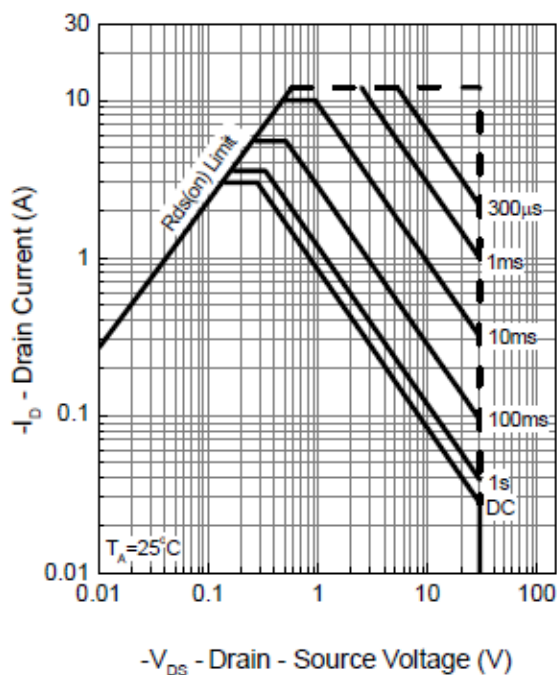
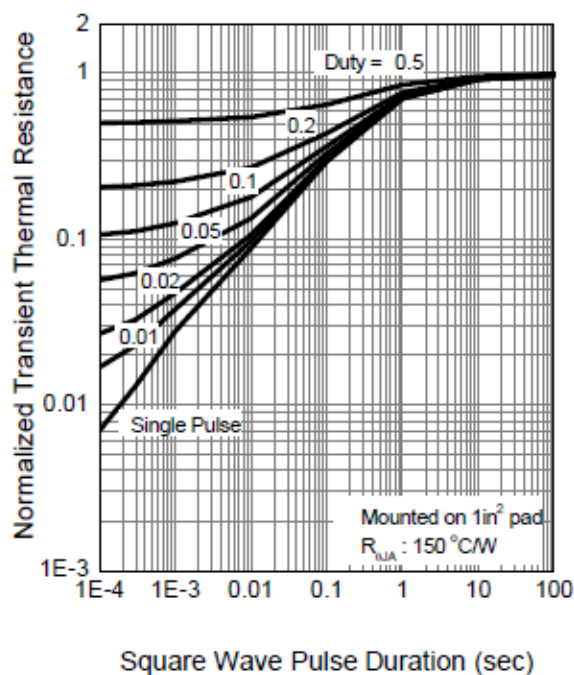
Electrical Characteristics (TA = 25°C, unless otherwise noted)

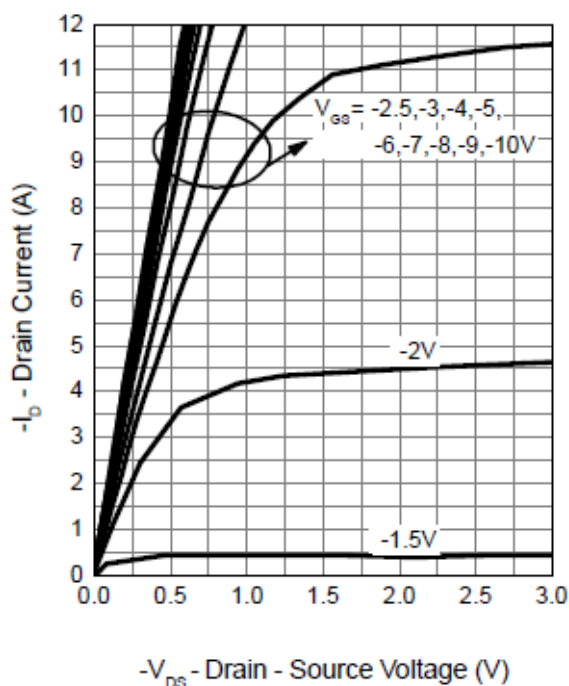
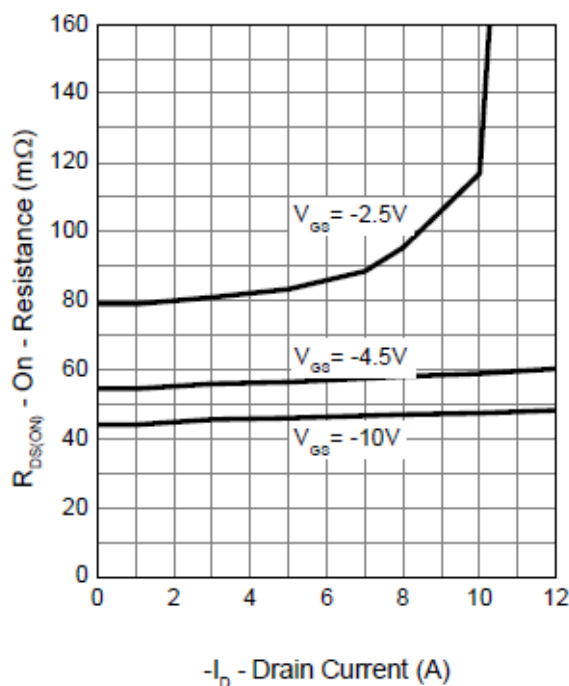
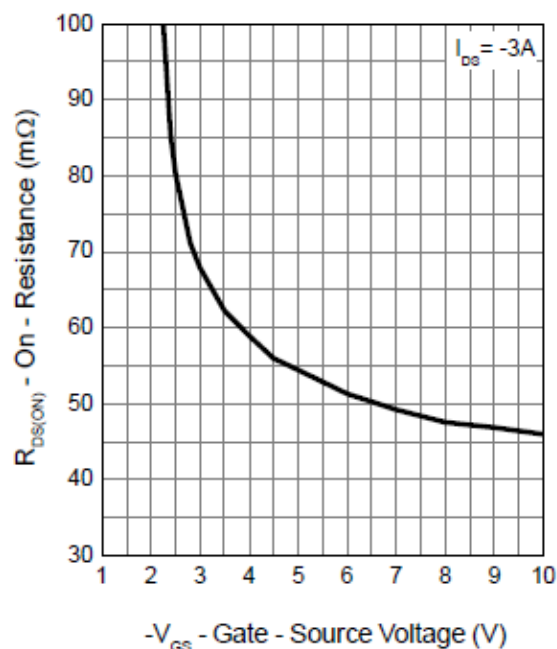
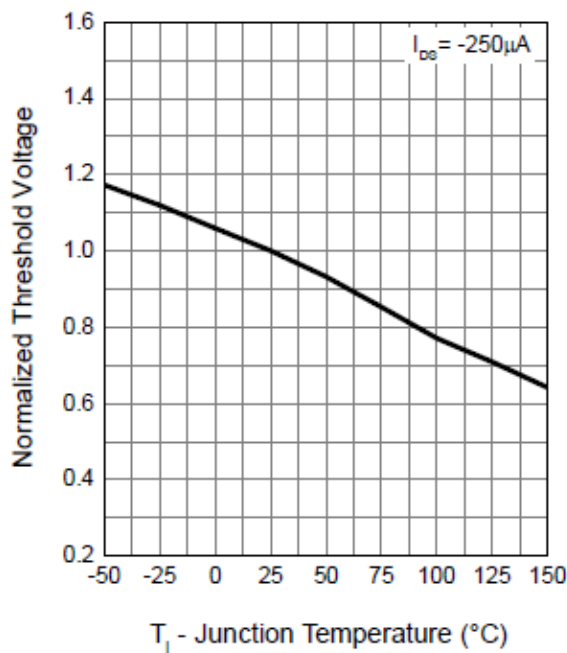
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Static						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-30			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-24V, V _{GS} =0V T _A =85°C			-1	μA
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.6	-1	-1.5	V
R _{DS(ON)} ^b	Drain-Source On-state Resistance	V _{GS} =-10V, I _{DS} =-4A		43	55	mΩ
		V _{GS} =-4.5V, I _{DS} =-2A		50	70	mΩ
		V _{GS} =-2.5V, I _{DS} =-1A		60	100	mΩ
V _{SD} ^b	Diode Forward Voltage	I _S =-1.7A, V _{GS} =0V		-0.75	-1.3	V
Dynamic^c						
Q _g	Total Gate Charge	V _{DS} =-15V, I _D =-3A, V _{GS} =-10V		15.5	22	nC
Q _{GS}	Gate-Source Charge			1.5		nC
Q _{GD}	Gate-Drain Charge			2.6		nC
T _{D(ON)}	Turn-on Delay Time	V _{DD} =-15V, I _{DS} =-1A V _{GEN} =-10V, R _G =6Ω, R _L =15Ω		8	15	nS
T _R	Turn-on Rise Time			12	23	nS
T _{D(OFF)}	Turn-off Delay Time			40	73	nS
T _F	Turn-off Fall Time			16	30	nS
T _{RR}	Reverse Recovery Time	I _{DS} =-3A, dI _{DS} /dt=100A/μs		15		nS
Q _{RR}	Reverse Recovery Charge			7		nC
C _{ISS}	Input Capacitance	V _{GS} =0V, V _{DS} =-15V, Frequency=1.0MHz		780		pF
C _{OSS}	Output Capacitance			100		pF
C _{RSS}	Reverse Transfer Capacitance			60		pF

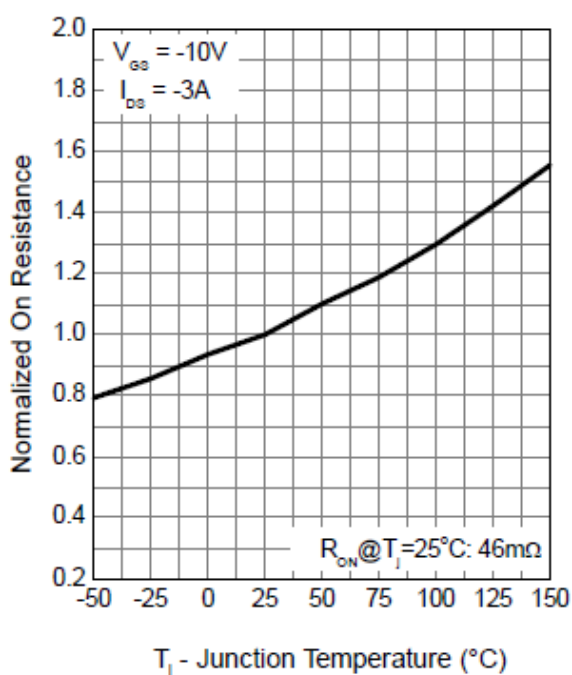
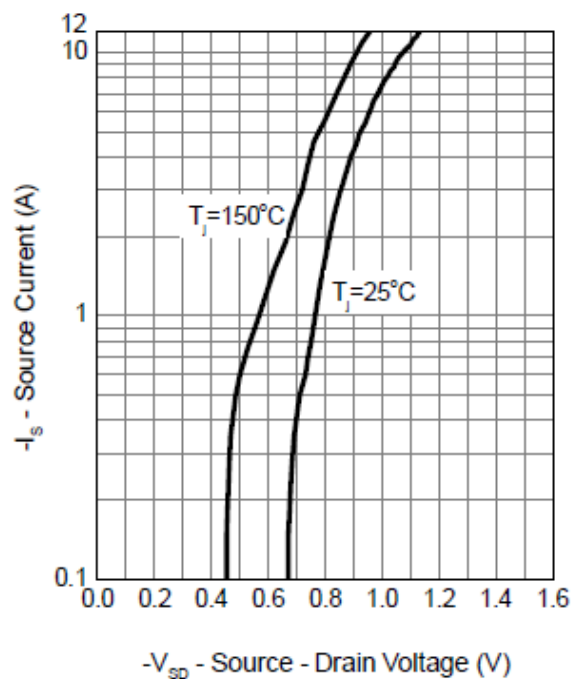
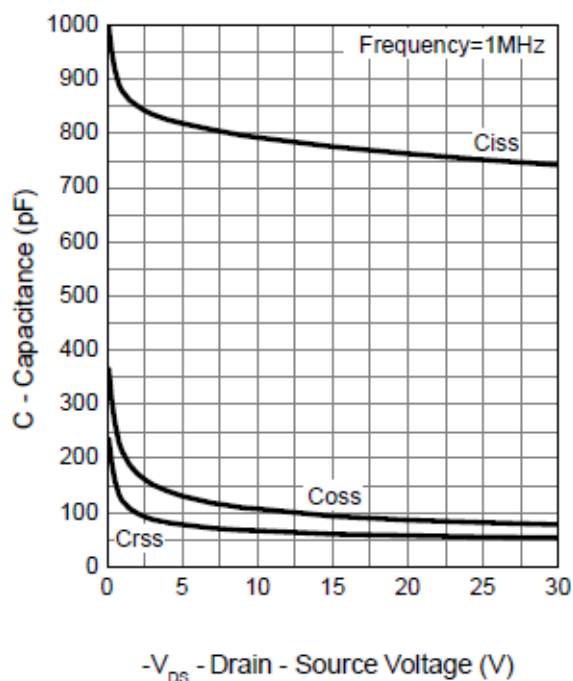
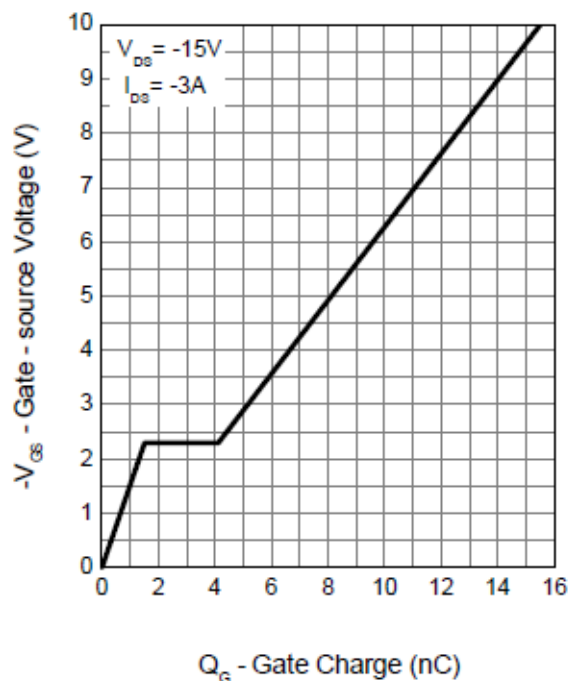
Notes

- a: Surface Mounted on FR4 Board, t ≤ 10 sec.
b: Pulse test; pulse width ≤ 300μs, duty cycle ≤ 2%.
c: Guaranteed by design, not subject to production testing.

Typical Performance Characteristics

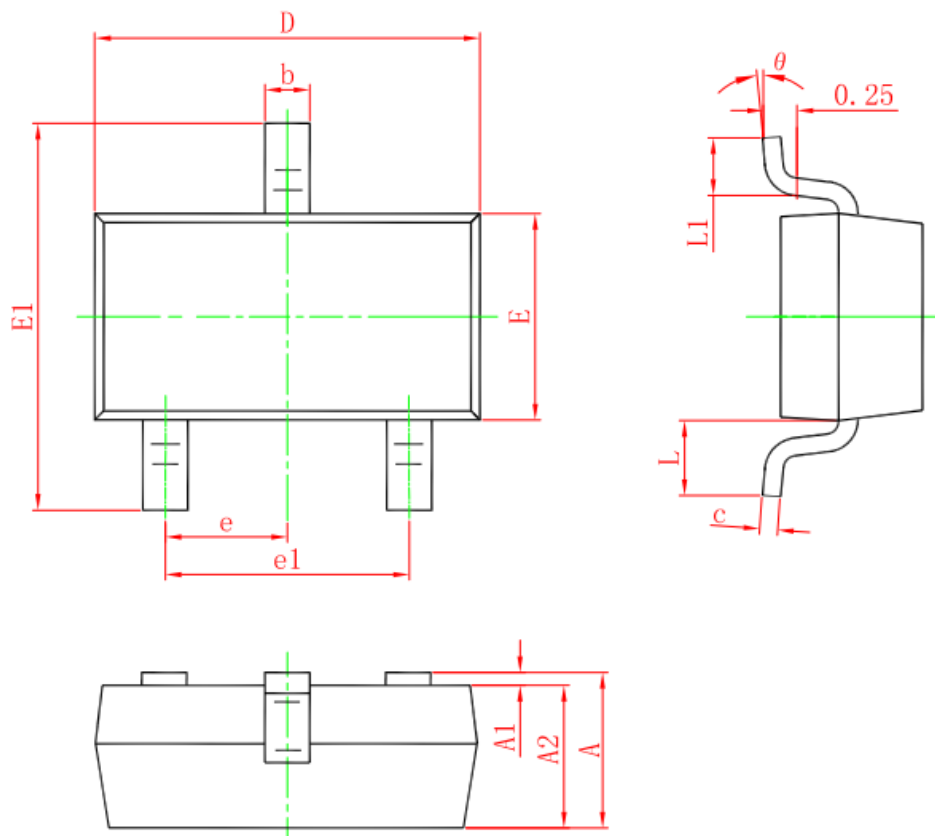
Power Dissipation

Drain Current

Safe Operation Area

Thermal Transient Impedance


Output Characteristics

Drain-Source On Resistance

Gate-Source On Resistance

Gate Threshold Voltage


Drain-Source On Resistance

Source-Drain Diode Forward

Capacitance

Gate Charge


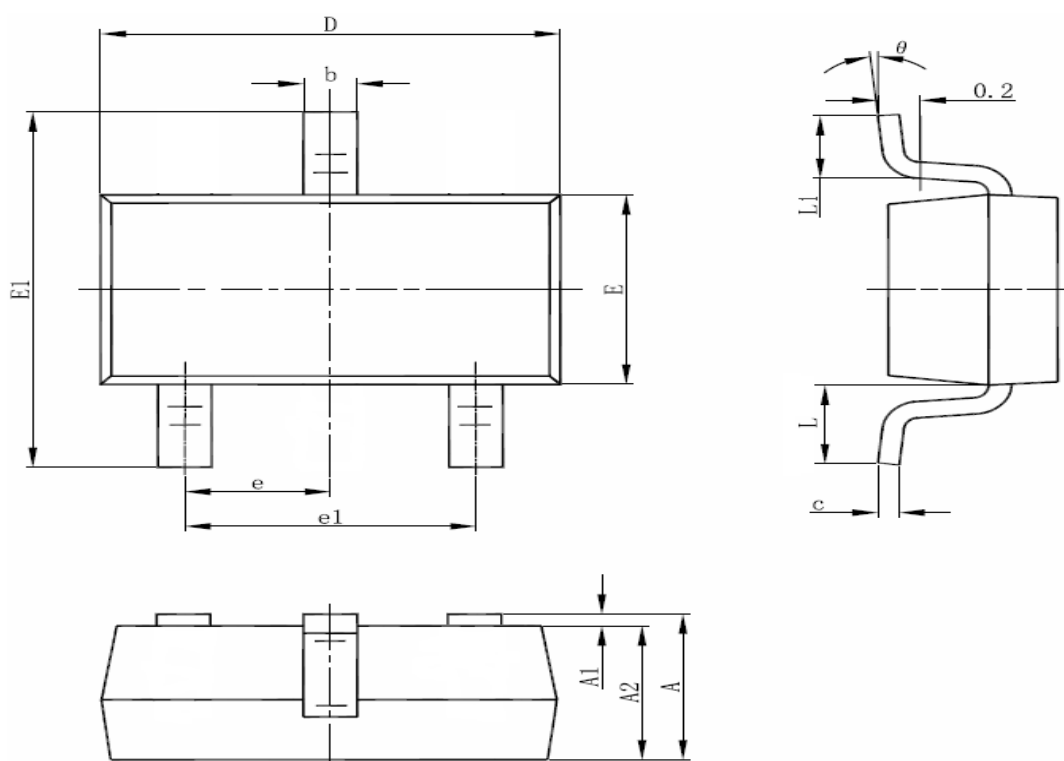
Package Outline Dimensions

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	0.950TYP.		0.037TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550REF.		0.022REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23-3L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.700(REF)		0.028(REF)	
L1	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

Subject changes without notice.