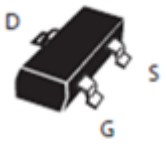
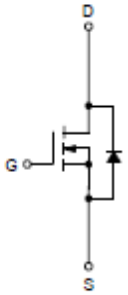
Features

- 30V/5A
  $R_{DS(ON)}$ =24mΩ(Typ.) @ V_{GS}=10V
  $R_{DS(ON)}$ =28mΩ(Typ.) @ V_{GS}=4.5V
  $R_{DS(ON)}$ =42mΩ(Typ.) @ V_{GS}=2.5V
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description



SOT-23/SOT-23-3L



N-Channel MOSFET

Applications

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

Ordering and Marking Information

HX3400: □ Package Code	Package Code A: SOT-23-3L
HX3400: A01T	

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℃, unless otherwise noted.)

SYMBOL	PARAMETER		RATINGS	UNITS
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±12	
I_D[a]	Maximum Drain Current-Continuous	V_{GS}=10V	5	A
I_{DM}	Maximum Drain Current – Pulsed		12	A
IS	Diode Continuous Forward Current		1	A
P_D	Maximum Power Dissipation	TA=25℃	1.4	W
		TA=100℃	1	
T_J	Maximum Junction Temperature		150	℃
T_{STG}	Storage Temperature Range		-55 to 150	℃
$R_{\theta jA}$	Thermal Resistance – Junction to Ambient		150	℃/W

Electrical Characteristics (TA = 25℃, unless otherwise noted.)

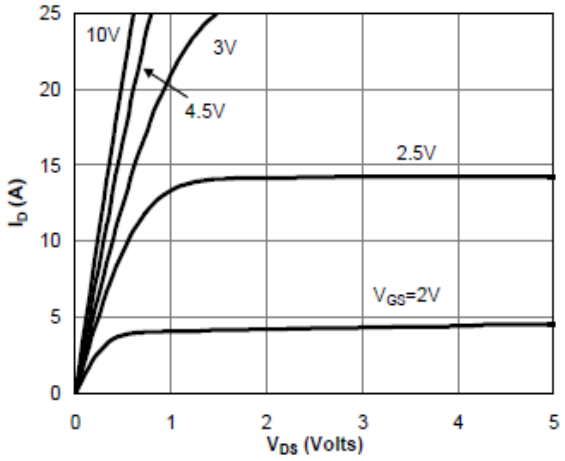
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Static						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250μA	30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V			1	μA
		T_J=85℃			30	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250μA	0.6	0.8	1.1	V
I_{GSS}	Gate Leakage Current	V_{GS}=±12V, V_{DS}=0V			±100	nA
$R_{DS(ON)}$[b]	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=5A		24	28	mΩ
		V_{GS}=4.5V, I_{DS}=3A		28	33	
		V_{GS}=2.5V, I_{DS}=1.5A		40	52	
V_{SD}[b]	Diode Forward Voltage	I_{SD}=0.5A, V_{GS}=0V		0.7	1.3	V
Dynamic[c]						
Q_g	Total Gate Charge	V_{DS}=15V, I_{DS}=5A V_{GS}=4.5V		7.9	12	nC
Q_{GS}	Gate-Source Charge			1.6		nC
Q_{GD}	Gate-Drain Charge			3.1		nC
$T_{D(ON)}$	Turn-on Delay Time	V_{GS}=10V,R_L=2.7Ω V_{DS}=15V,R_G=3Ω		3.3	5	nS
T_R	Turn-on Rise Time			4.8	7	nS
$T_{D(OFF)}$	Turn-off Delay Time			26.3	40	nS
T_F	Turn-off Fall Time			4.1	6	nS
C_{ISS}	Input Capacitance	V_{GS}=0V, V_{DS}=15V, Frequency=1.0MHz		823	1030	pF
C_{OSS}	Output Capacitance			99		pF
C_{RSS}	Reverse Transfer Capacitance			77		pF

Notes

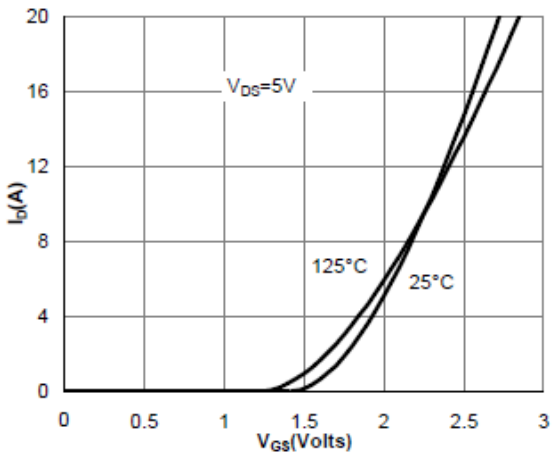
a: Surface Mounted on FR4 Board, t ≤ 10 sec.
b: Pulse test ; pulse width ≤300μs, duty cycle ≤ 2%.
c: Guaranteed by design, not subject to production testing.

Typical Characteristics

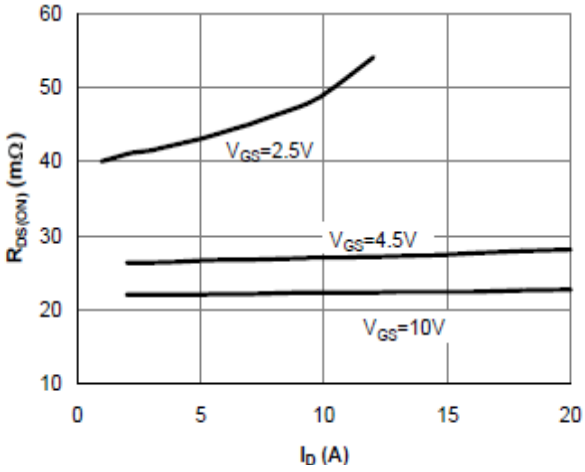
Output Characteristic



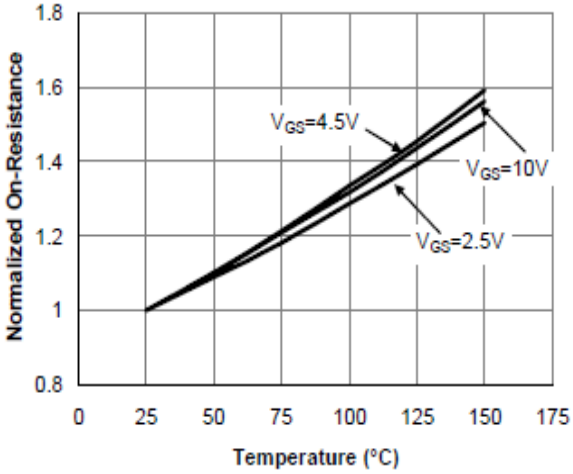
Transfer Characteristic



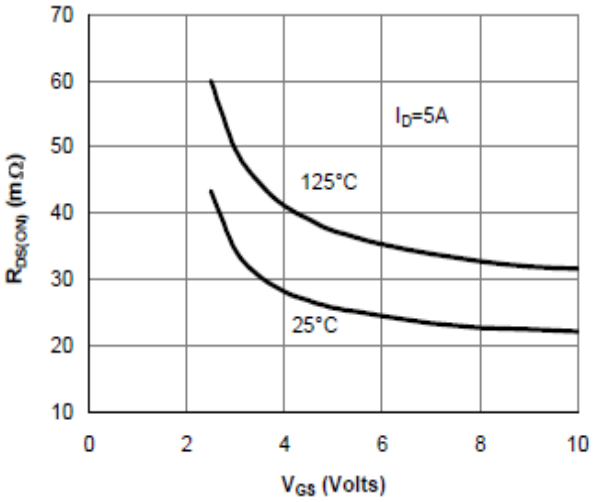
On-Resistance vs. Drain Current



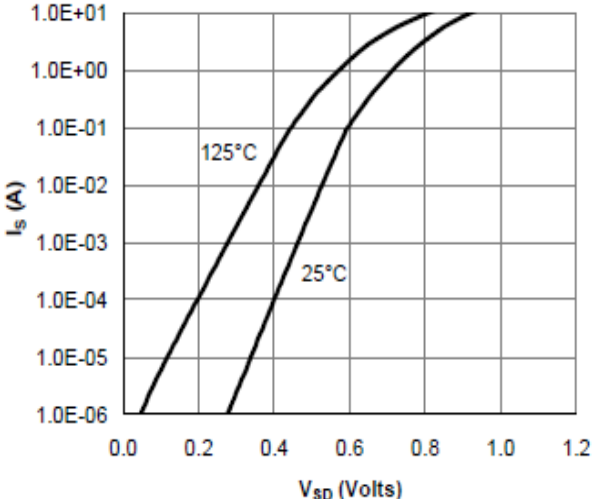
On-Resistance vs. Junction Temperature



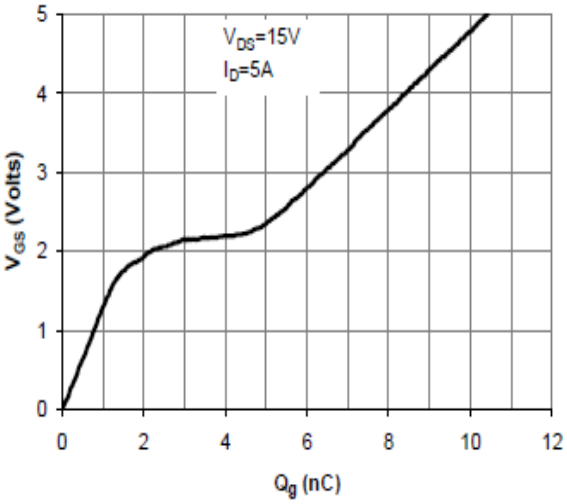
On-Resistance vs. Gate-Source Voltage



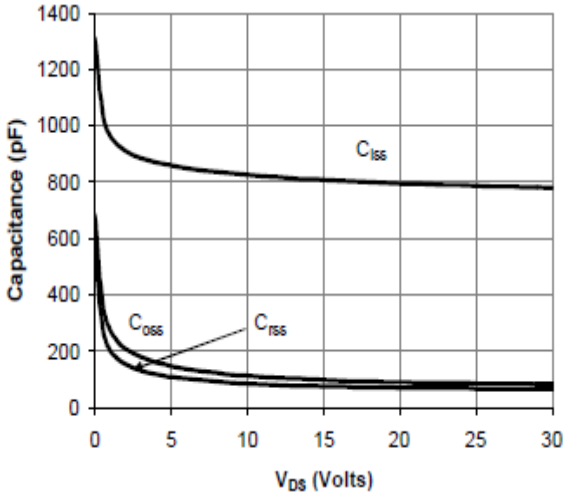
Body-Diode Characteristics



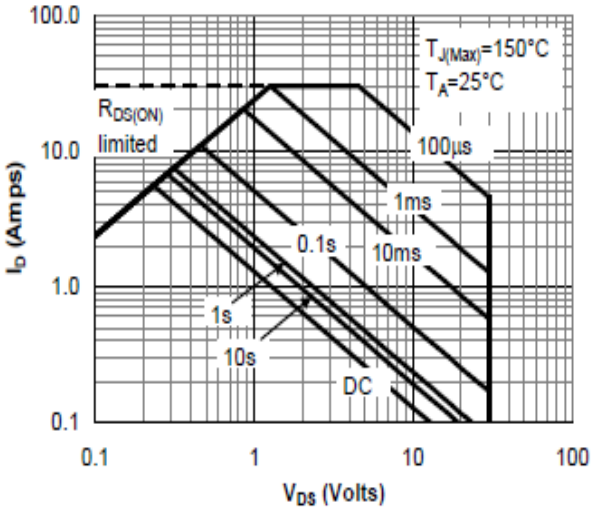
Gate-Charge Characteristics



Capacitance Characteristics



Maximum Forward Biased Safe Operating Area (Note E)



Single Pulse Power Rating Junction-to-Ambient (Note E)

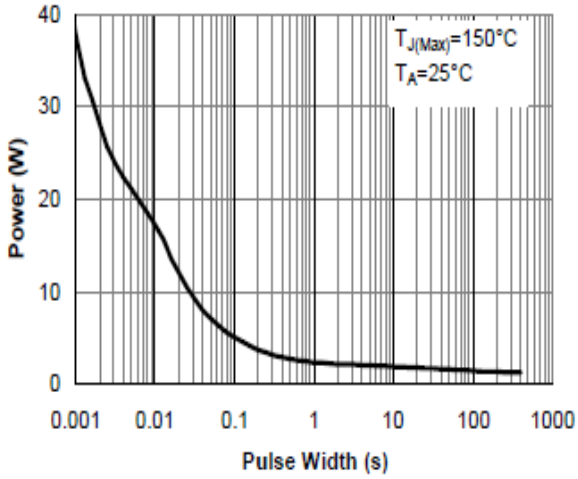
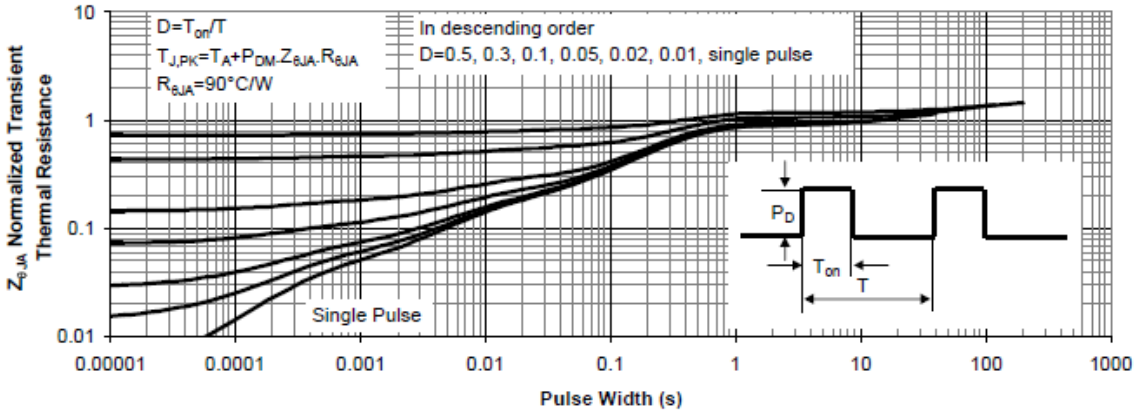


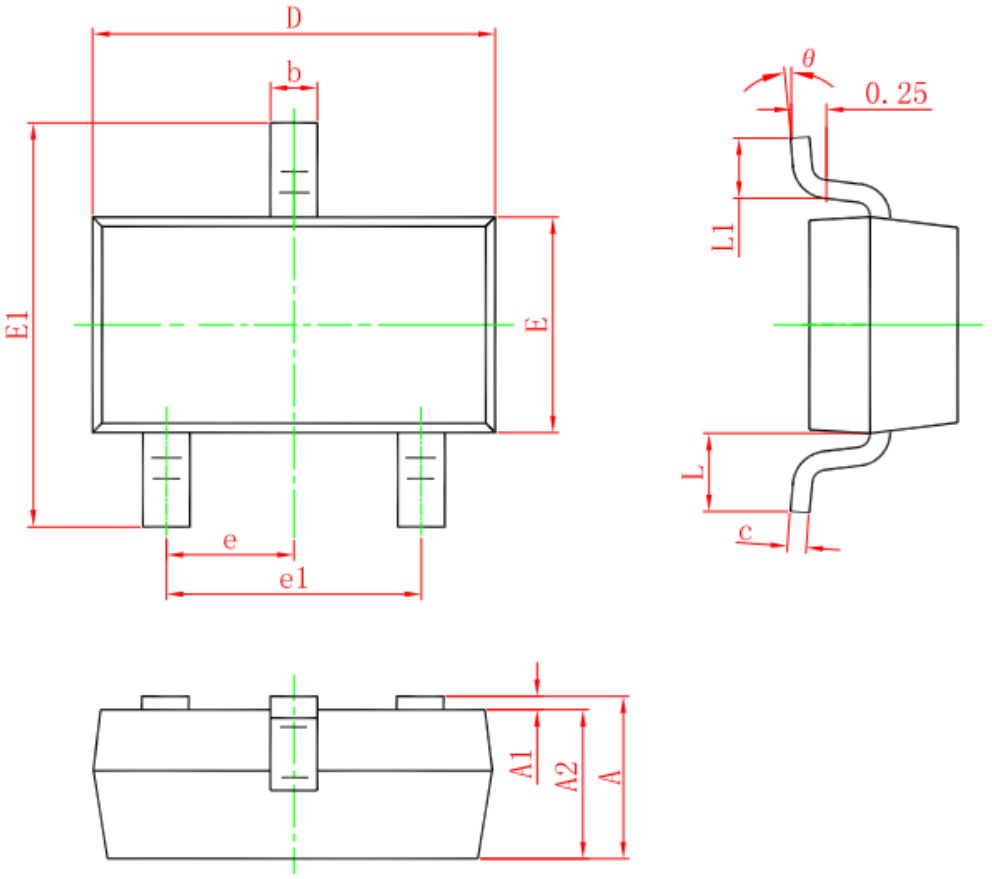
Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

Normalized Maximum Transient Thermal Impedance



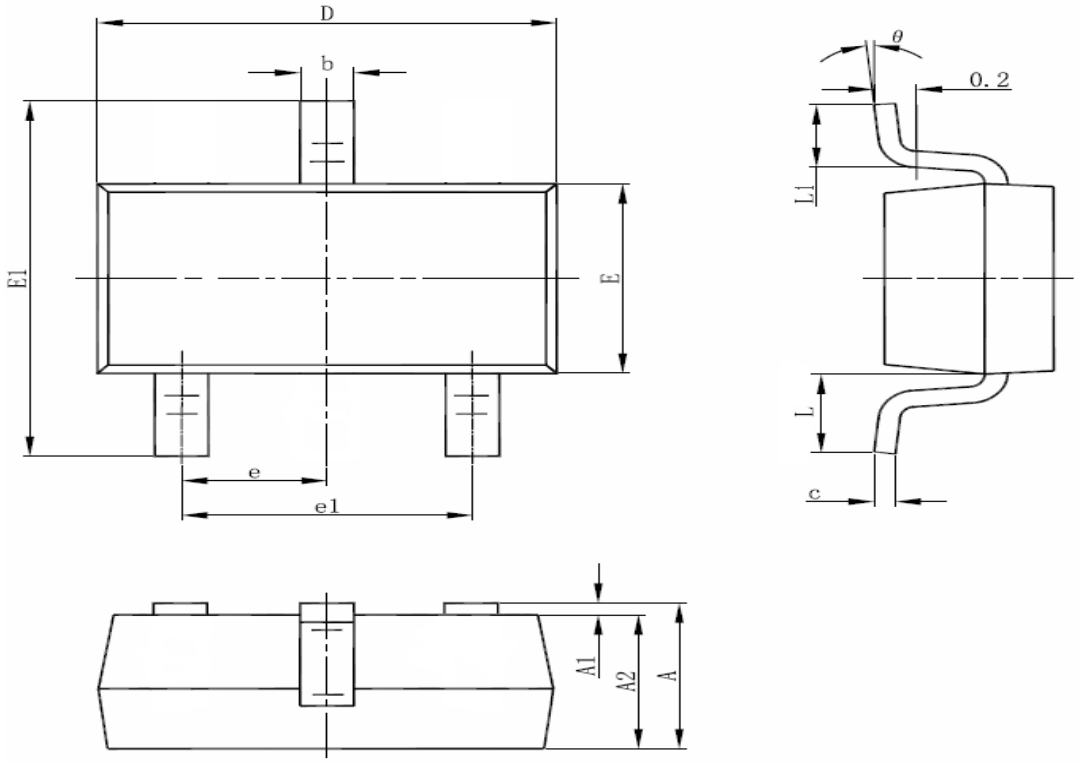
Package Outline Dimensions

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	0.950(TYP.)		0.037(TYP.)	
e1	1.800	2.000	0.071	0.079
L	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.