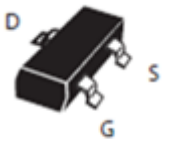
HX3407

P-Channel Enhancement Mode MOSFET

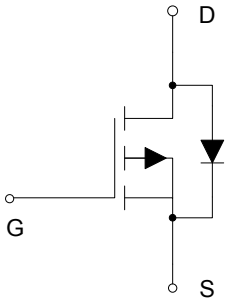
Features

- -30V/-4.5A
  $R_{DS(ON)}$= 43mΩ(Typ.) @ V_{GS}=-10V
  $R_{DS(ON)}$= 60mΩ(Typ.) @ V_{GS}=-4.5V
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Devices Available (RoHS Compliant)

Pin Description



SOT-23/SOT-23-3L



Applications

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

Ordering and Marking Information

HX3407: □ Package Code	Package Code A: SOT-23-3L
HX3407: A7DP	

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		RATING	UNITS
V_{DS}	Drain-Source Voltage		-30	V
V_{GS}	Gate-Source Voltage		±20	V
I_D[a]	Maximum Drain Current-Continuous	V_{GS}=-10V	-4.5	A
I_{DM}[b]	Maximum Drain Current – Pulsed		-16	A
I_S	Maximum Continuous Drain-Source Diode Forward Current		-1.8	A
P_D[a]	Maximum Power Dissipation	T_A=25℃	1.4	W
		T_A=100℃	0.3	W
T_J, T_{STG}	Junction and Storage Temperature Range		-55 to 150	℃
$R_{\theta jA}$[a]	Thermal Resistance – Junction to Ambient		150	℃/W

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

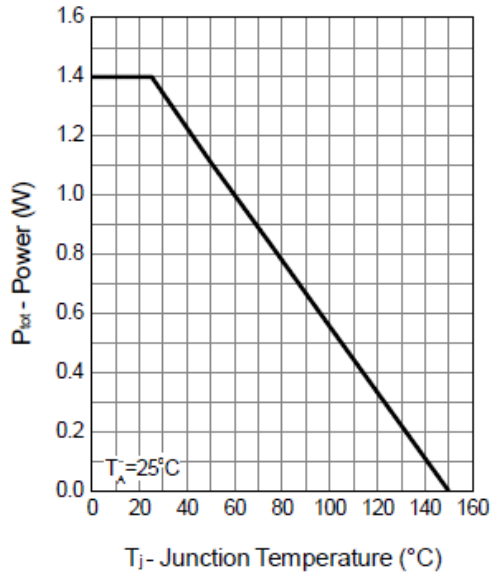
SYMBOL	PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
Static						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=-250μA	-30			V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-24V, V_{GS}=0V			-1	μA
		T_J=85℃			-30	μA
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V			±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=-250μA	-1	-1.8	-2.5	V
$R_{DS(ON)}$[b]	Drain-Source On-state Resistance	V_{GS}=-10V,I_{DS}=-4.5A		43	52	mΩ
		V_{GS}=-4.5V,I_{DS}=-3A		60	78	mΩ
V_{SD}[b]	Diode Forward Voltage	I_S=-1.8A , V_{GS}=0V		-0.8	-1.3	V
Dynamic[c]						
Q_g	Total Gate Charge	V_{DS}=-15V, I_D=-4.5A, V_{GS}=-10V		13	18	nC
Q_{GS}	Gate-Source Charge			2		nC
Q_{GD}	Gate-Drain Charge			3		nC
$T_{D(ON)}$	Turn-on Delay Time	V_{DD}=-15V, I_{DS}=-1A V_{GEN}=-10V, R_G=6Ω,R_L=15Ω		6	12	nS
T_R	Turn-on Rise Time			11	21	nS
$T_{D(OFF)}$	Turn-off Delay Time			28	51	nS
T_F	Turn-off Fall Time			10	19	nS
T_{RR}	Reverse Recovery Time	I_{DS}=-4.5A, dI_{DS}/dt=100A/μs		15		nS
Q_{RR}	Reverse Recovery Charge			6		nC
C_{ISS}	Input Capacitance	V_{GS}=0V, V_{DS}=-15V, Frequency=1.0MHz		800		pF
C_{OSS}	Output Capacitance			130		pF
C_{RSS}	Reverse Transfer Capacitance			75		pF

Notes

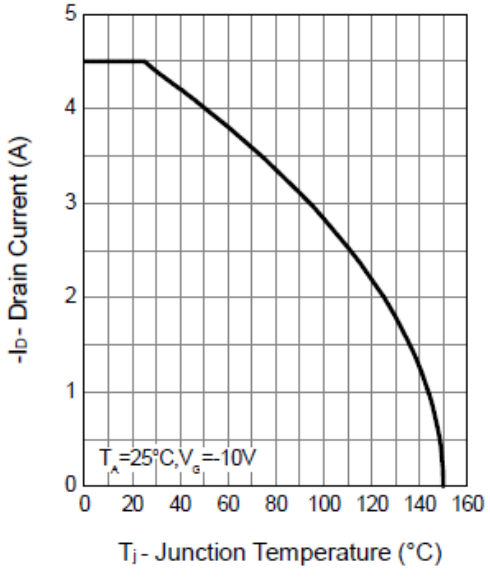
a: Surface Mounted on FR4 Board, t ≤ 10 sec.
b: Pulse test; pulse width ≤300μs, duty cycle ≤ 2%.
c: Guaranteed by design, not subject to production testing.

Typical Performance Characteristics

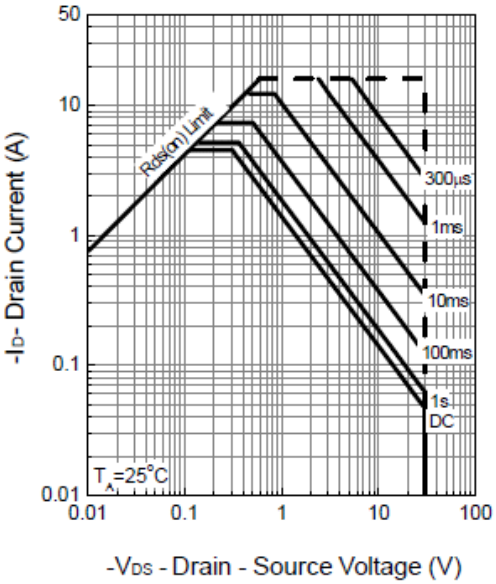
Power Dissipation



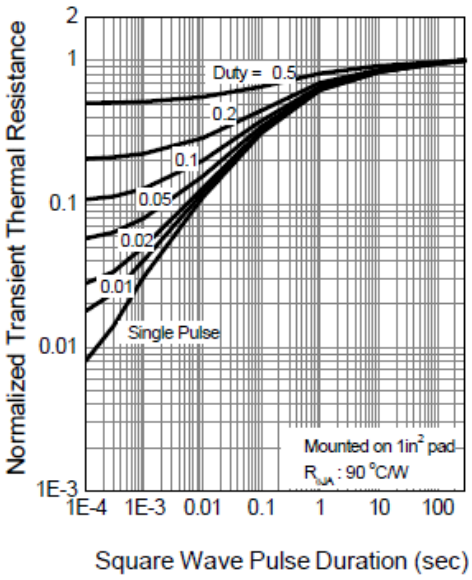
Drain Current



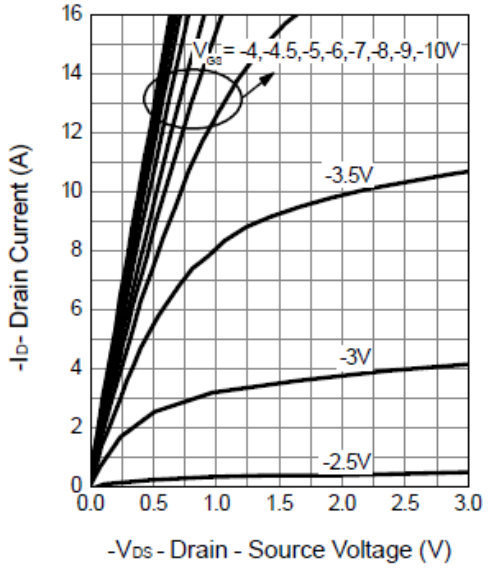
Safe Operation Area



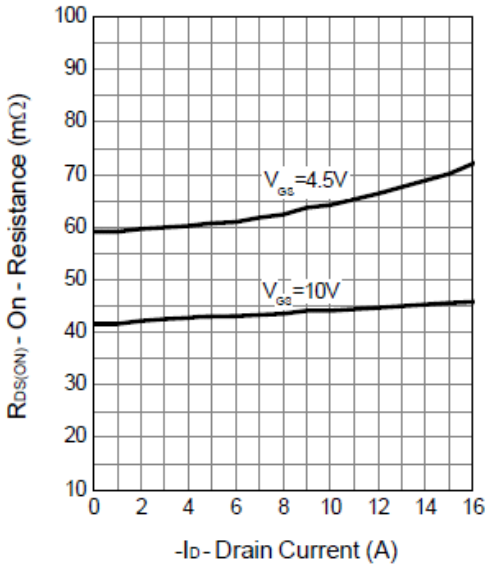
Thermal Transient Impedance



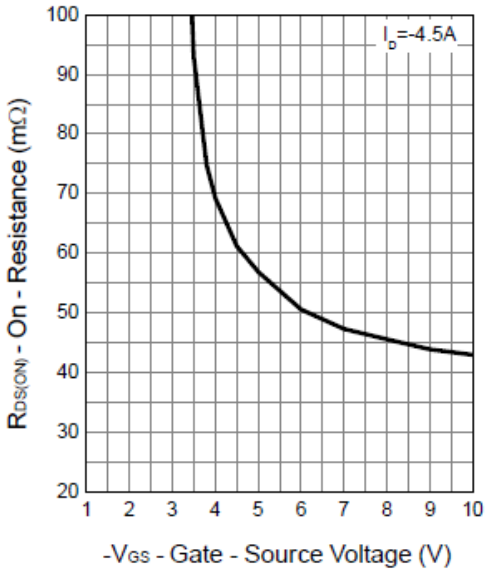
Output Characteristics



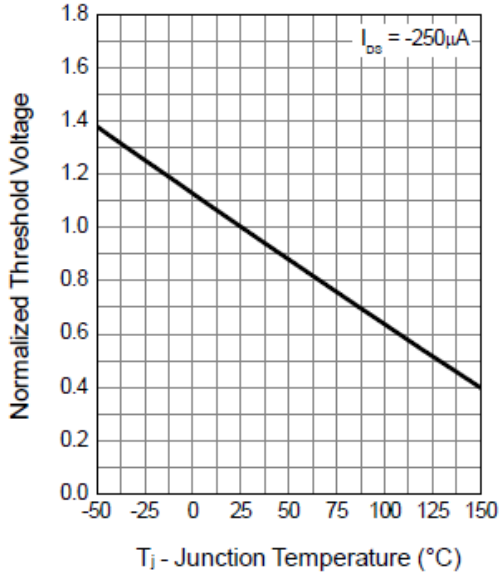
Drain-Source On Resistance



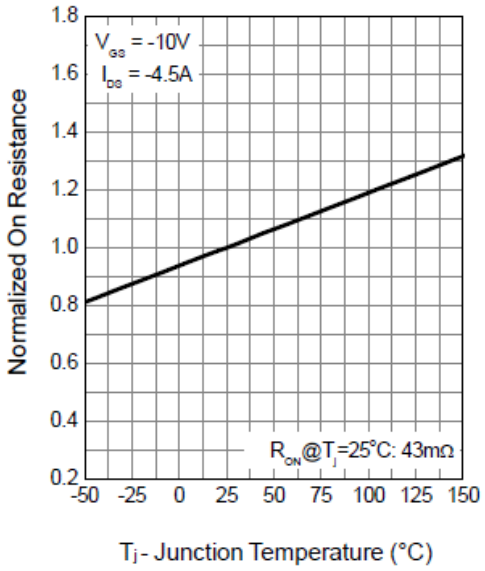
Drain-Source On Resistance



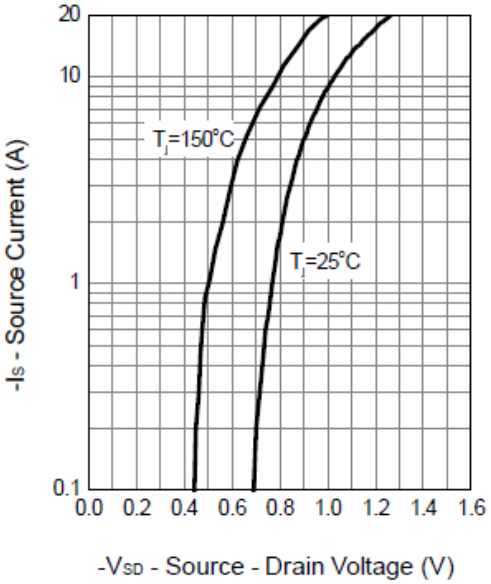
Gate Threshold Voltage



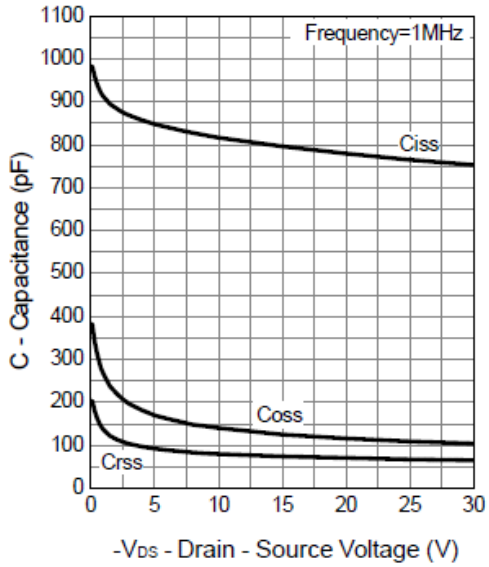
Drain-Source On Resistance



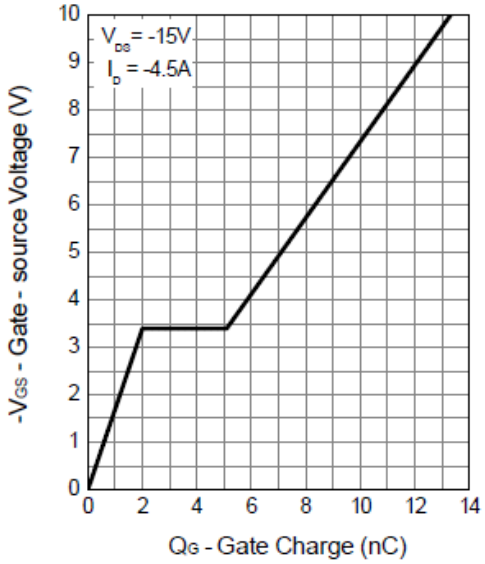
Source-Drain Diode Forward



Capacitance

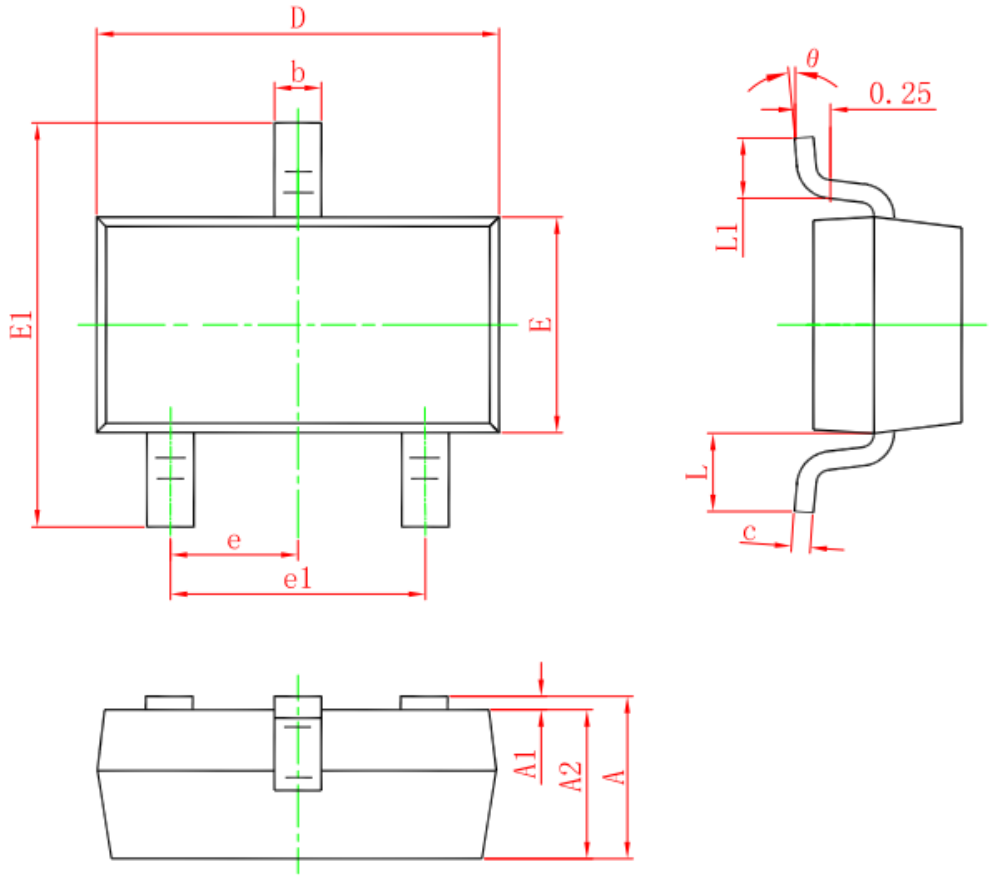


Gate Charge



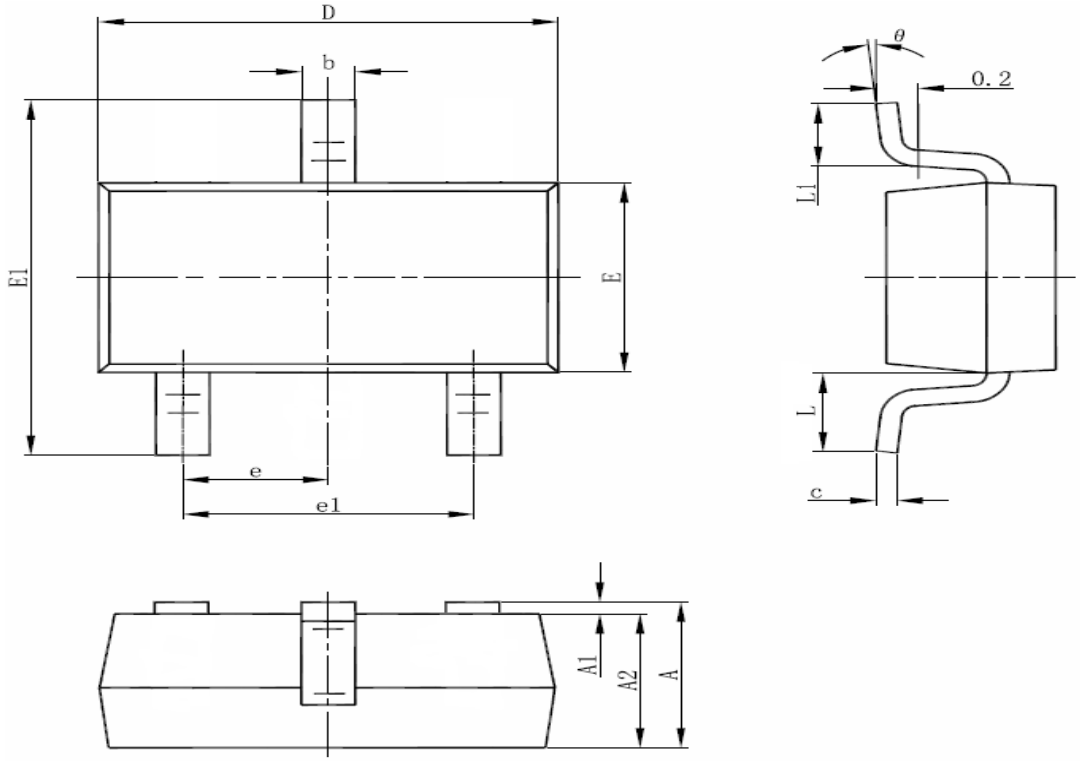
Package Outline Dimensions

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	0.950(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.