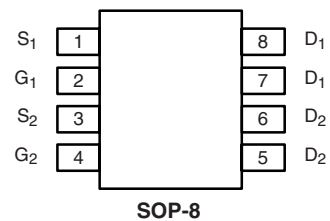
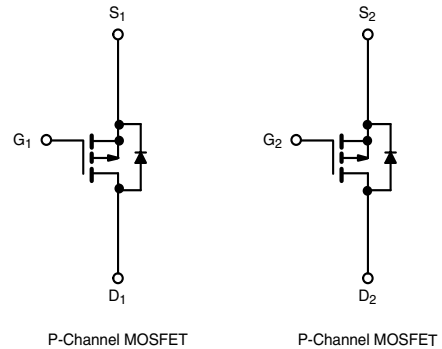


PRODUCT SUMMARY

- $V_{DS} (V) = -60V$
- $R_{DS(ON)} < 120m\Omega$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 150 m\Omega$ ($V_{GS} = -4.5V$)



ABSOLUTE MAXIMUM RATINGS $T_A = 25\text{ }^\circ\text{C}$, unless otherwise noted

Parameter	Symbol	10 s	Steady State	Unit	
Drain-Source Voltage	V_{DS}	- 60		V	
Gate-Source Voltage	V_{GS}	± 20			
Continuous Drain Current ($T_J = 150\text{ }^\circ\text{C}$) ^a	I_D	$T_A = 25\text{ }^\circ\text{C}$	- 3.1	- 2.4	A
		$T_A = 70\text{ }^\circ\text{C}$	- 2.6	- 2.0	
Pulsed Drain Current (10 μs Pulse Width)	I_{DM}	- 25			
Continuous Source Current (Diode Conduction) ^a	I_S	- 2	- 1.1		
Avalanche Current	I_{AS}	15		mJ	
Single Pulse Avalanche Energy		E_{AS}	11		
Maximum Power Dissipation ^a	P_D	$T_A = 25\text{ }^\circ\text{C}$	2.4	1.4	W
		$T_A = 70\text{ }^\circ\text{C}$	1.7	0.95	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	- 55 to 175		$^\circ\text{C}$	

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit	
Maximum Junction-to-Ambient ^a	R_{thJA}	$t \leq 10\text{ s}$	53	62.5	$^\circ\text{C/W}$
		Steady State	85	110	
Maximum Junction-to-Foot	R_{thJF}	30	37		

Notes:

a. Surface Mounted on 1" x 1" FR4 board.

SPECIFICATIONS $T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted

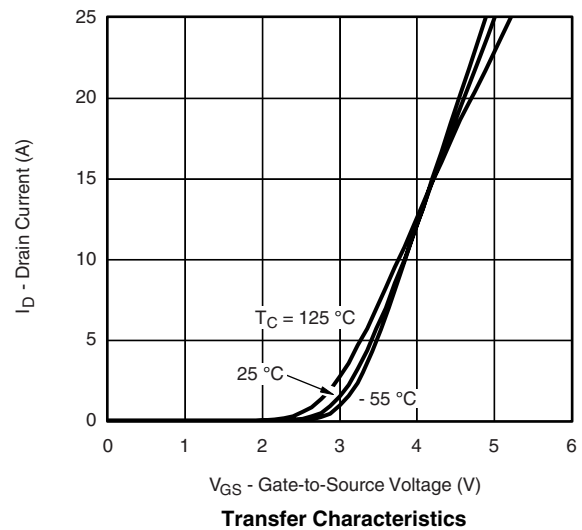
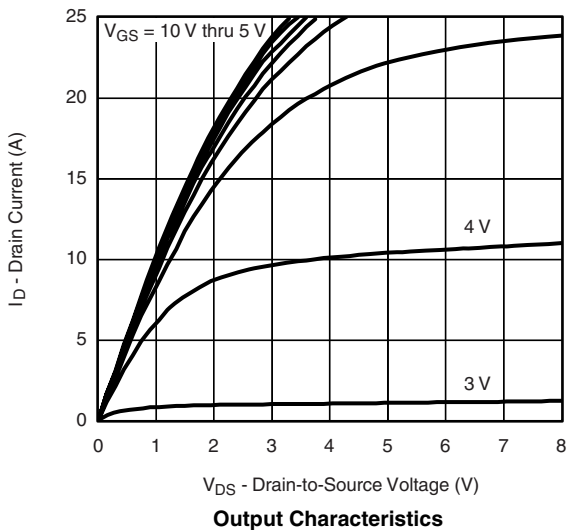
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	-1		-3	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -60\text{ V}, V_{GS} = 0\text{ V}$			-1	μA
		$V_{DS} = -60\text{ V}, V_{GS} = 0\text{ V}, T_J = 70\text{ }^\circ\text{C}$			-10	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} = -5\text{ V}, V_{GS} = -10\text{ V}$	-25			A
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = -10\text{ V}, I_D = -3.1\text{ A}$		100	120	m Ω
		$V_{GS} = -4.5\text{ V}, I_D = -0.2\text{ A}$		126	150	
Forward Transconductance ^a	g_{fs}	$V_{DS} = -15\text{ V}, I_D = -3.1\text{ A}$		8.5		S
Diode Forward Voltage ^a	V_{SD}	$I_S = -2\text{ A}, V_{GS} = 0\text{ V}$		-0.8	-1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = -30\text{ V}, V_{GS} = -10\text{ V}, I_D = -3.1\text{ A}$		14.5	22	nC
Gate-Source Charge	Q_{gs}			2.2		
Gate-Drain Charge	Q_{gd}			3.7		
Gate Resistance	R_g	$f = 1\text{ MHz}$		14		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -30\text{ V}, R_L = 30\text{ }\Omega$ $I_D \cong -1\text{ A}, V_{GEN} = -10\text{ V}, R_g = 6\text{ }\Omega$		10	15	ns
Rise Time	t_r			15	22	
Turn-Off Delay Time	$t_{d(off)}$			50	75	
Fall Time	t_f			35	55	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = -2\text{ A}, dI/dt = 100\text{ A}/\mu\text{s}$		30	50	

Notes:

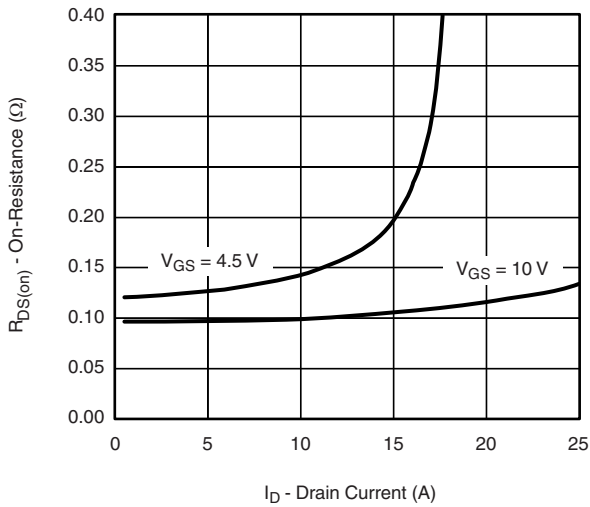
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
- b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

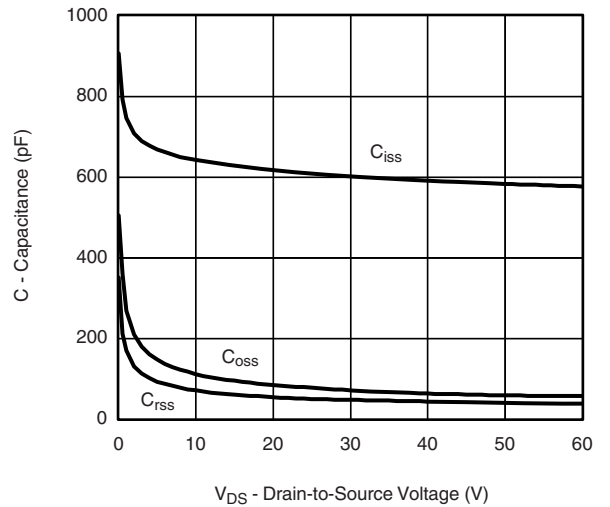
TYPICAL CHARACTERISTICS $25\text{ }^\circ\text{C}$, unless otherwise noted



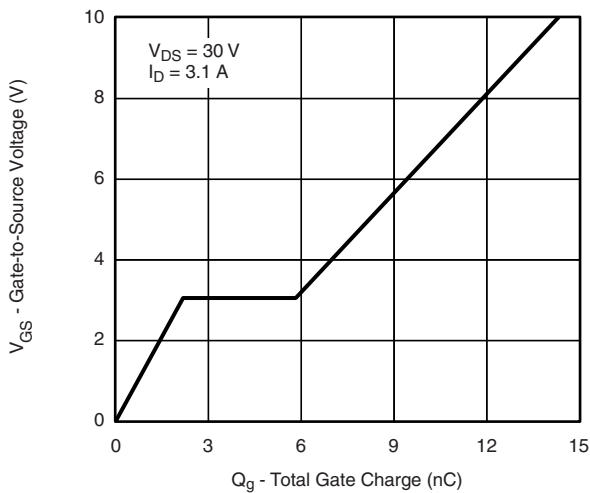
TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



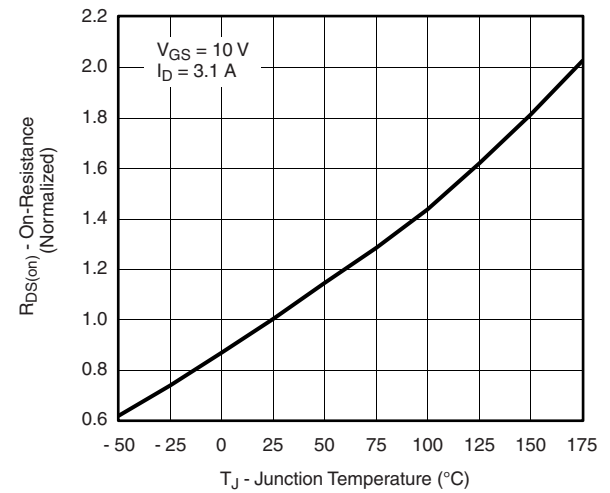
On-Resistance vs. Drain Current



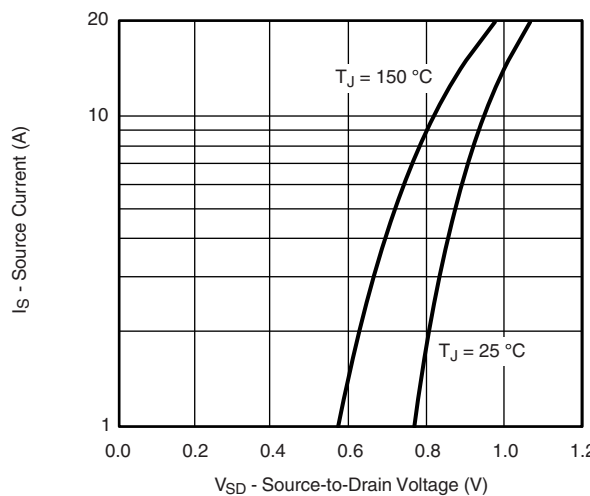
Capacitance



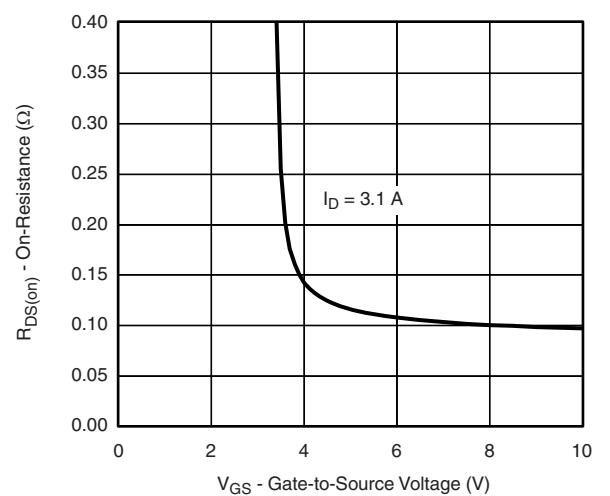
Gate Charge



On-Resistance vs. Junction Temperature

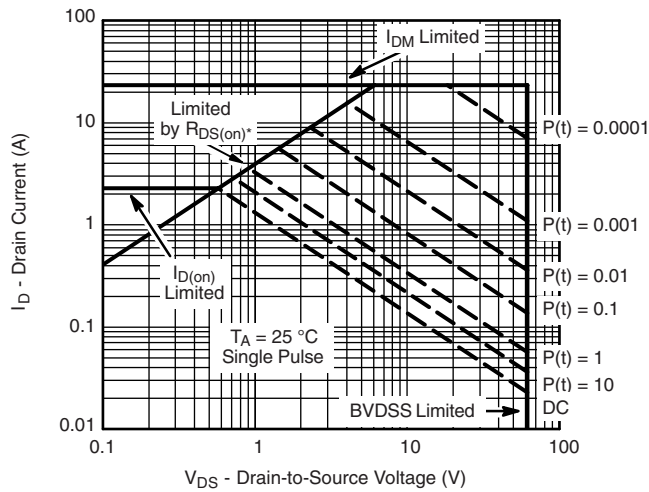
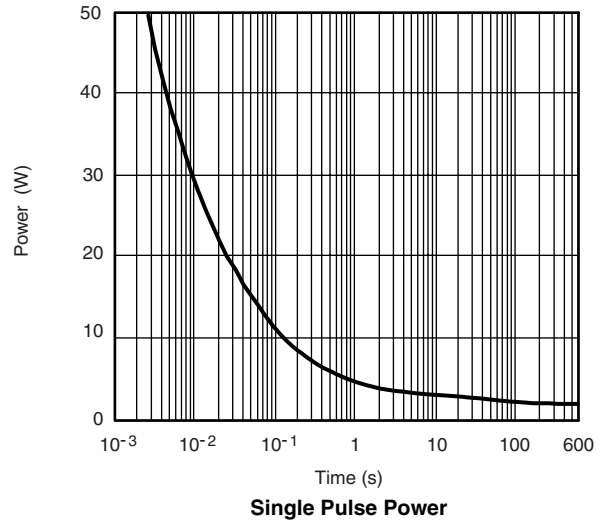
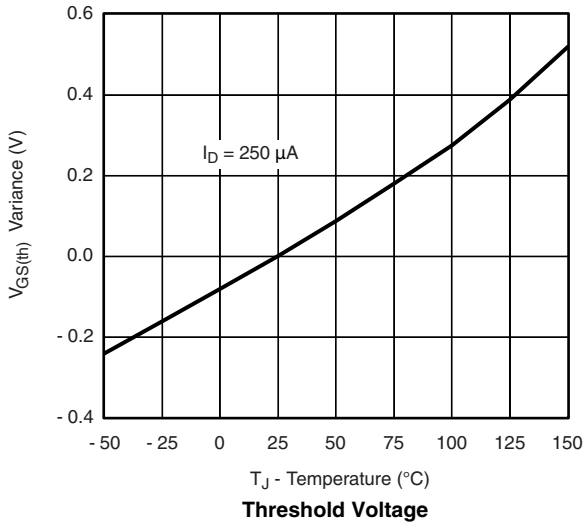


Source-Drain Diode Forward Voltage



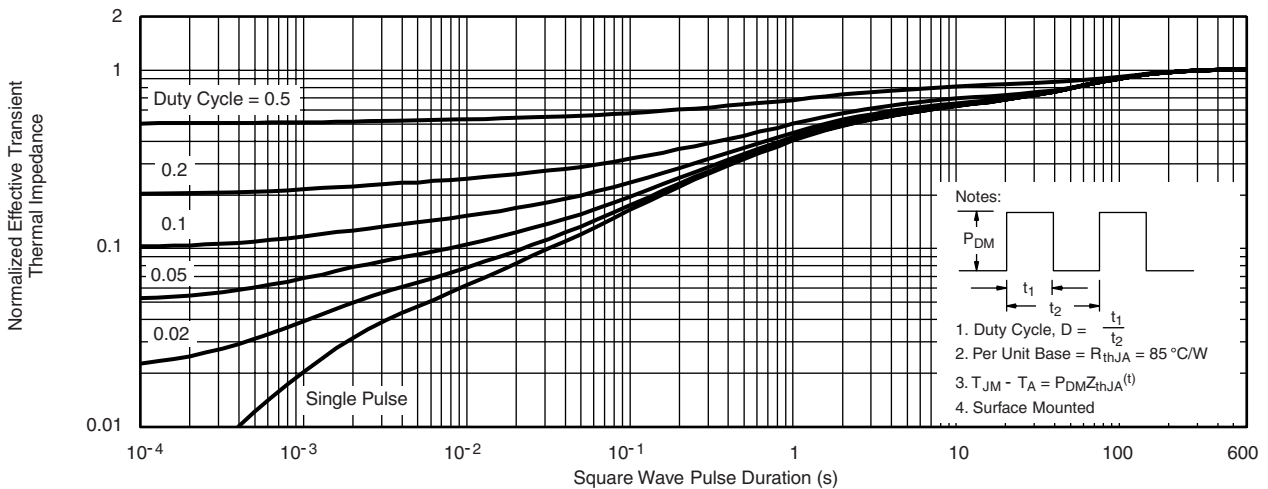
On-Resistance vs. Gate-to-Source Voltage

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted



* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified

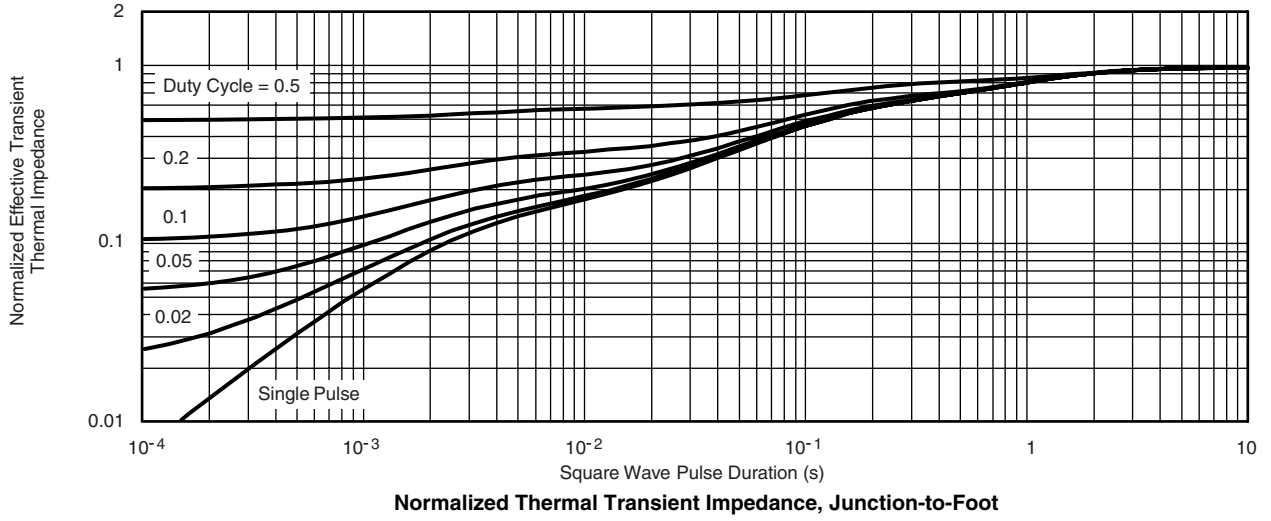
Safe Operating Area, Junction-to-Case



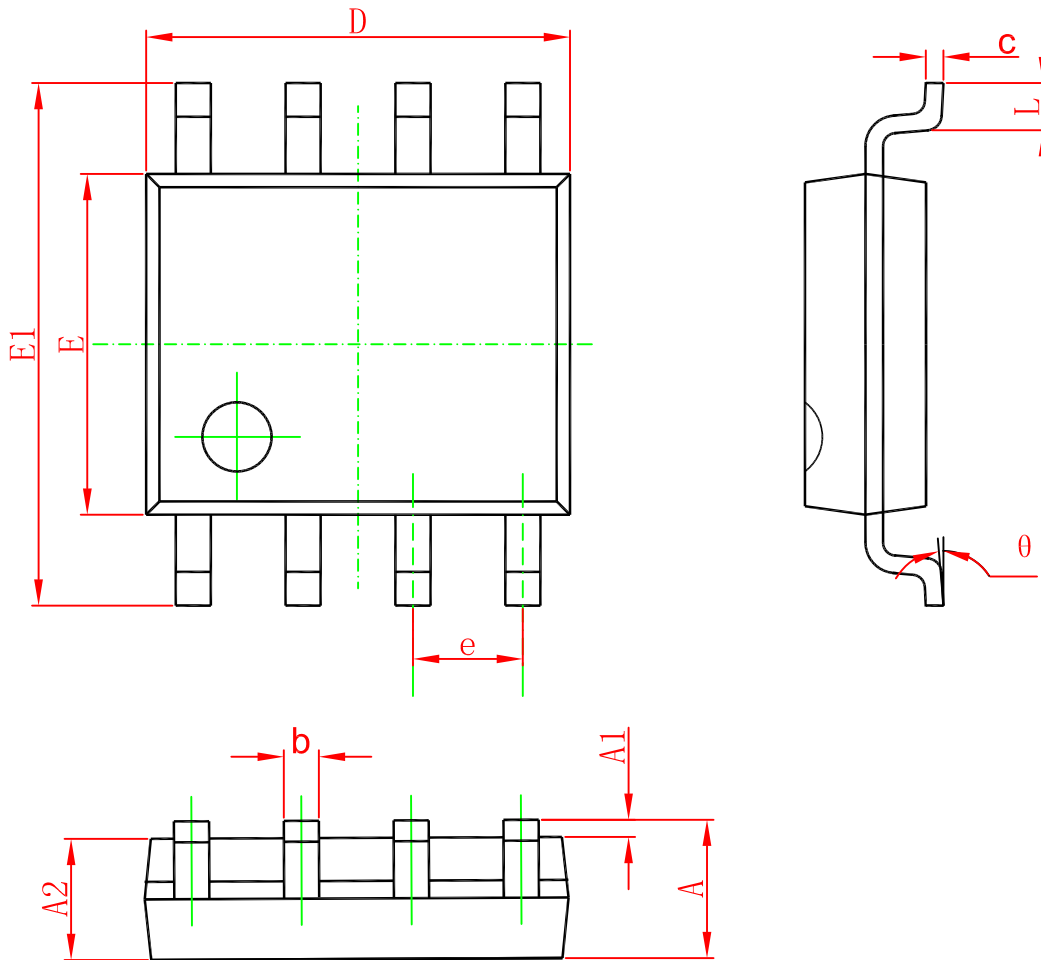
Notes:

1. Duty Cycle, $D = \frac{t_1}{t_2}$
2. Per Unit Base = $R_{thJA} = 85 \text{ °C/W}$
3. $T_{JM} - T_A = P_{DM} Z_{thJA}(t)$
4. Surface Mounted

TYPICAL CHARACTERISTICS 25 °C, unless otherwise noted

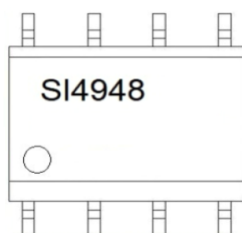


SOP-8



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
SI4948BEY	SOP-8	3000	Tape and reel