P-Channel Enhancement Mode MOSFET TDM3437

DESCRIPTION

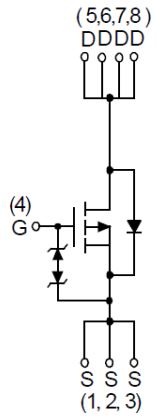
The TDM3437 uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a load switch or in PWM applications.

GENERAL FEATURES

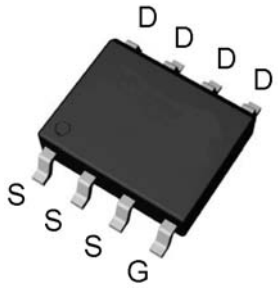
- RDS(ON) < 32mΩ @ VGS=-4.5V
  RDS(ON) < 19mΩ @ VGS=-10V
- Reliable and Rugged
- ESD protection pass 2KV
- Lead free product is available
- SOP-8 Package

Application

- PWM applications
- Load switch
- Power management



P-Channel MOSFET



Top View of Sop-8

ABSOLUTE MAXIMUM RATINGS(TA=25℃unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±25	V
Diode Continuous Forward Current	I_S	-16	A
Pulsed Drain Current	I_{DM}	-42	A
Continuous Drain Current	$I_{D\ (TA=25℃)}$	-11	A
	$I_{D\ (TA=70℃)}$	-8.4	A
Maximum Power Dissipation (note1)	$P_{D(TA=25℃)}$	3.1	W
	$P_{D(TA=70℃)}$	2	W
Maximum Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{STG}	-55 to 150	℃
Thermal Resistance-Junction to Ambient (note1)	$R_{\theta JA(t\leq 10s)}$	40	℃/W
	$R_{\theta JA(Steady\ State)}$	75	℃/W

ELECTRICAL CHARACTERISTICS (T_A=25℃unless otherwise noted)

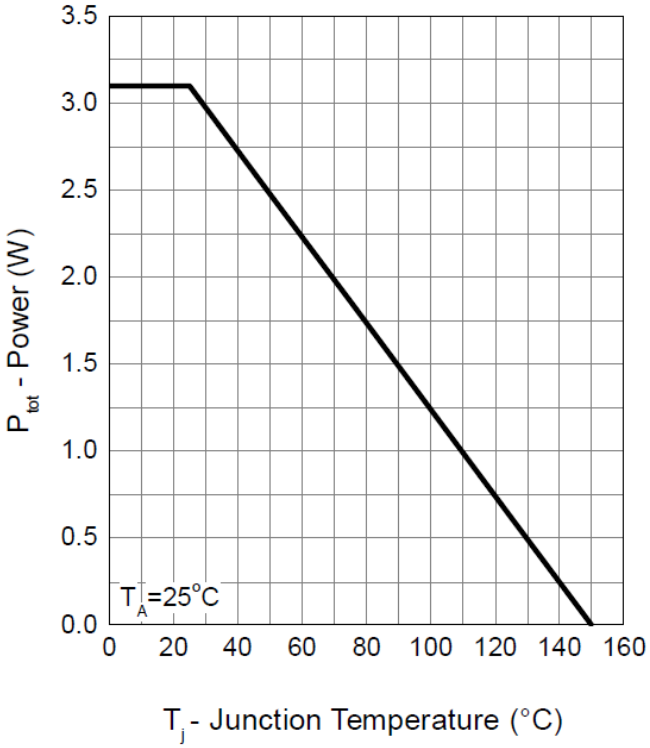
Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
STATIC CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-24, V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±25V, V_{DS}=0V	-	-	±10	μA
ON CHARACTERISTICS (Note2)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=VGS,I_D=-250μA	-1.3	-1.8	-2.3	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V,I_{DS}=-8.2A	-	25	32	mΩ
		V_{GS}=-10V, I_{DS}=-10.5A	-	16	19	mΩ
DYNAMIC CHARACTERISTICS (Note3)						
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V,F=1MHz	-	4	-	Ω
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V, F=1.0MHz	-	999	-	PF
Output Capacitance	C_{oss}		-	220	-	PF
Reverse Transfer Capacitance	C_{rss}		-	170	-	PF
SWITCHING CHARACTERISTICS (Note3)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-15V, R_L=15Ω, V_{GEN}=-10V,	-	11.2		nS
Turn-on Rise Time	t_r	R_G=6Ω I_{DS}=-1A	-	10.6		nS
Turn-Off Delay Time	$t_{d(off)}$		-	37		nS
Turn-Off Fall Time	t_f		-	50		nS
Total Gate Charge	Q_g	V_{DS}=-15V,I_{DS}=-10.5A,V_{GS}=-10V	-	20		nC
Gate-Source Charge	Q_{gs}		-	1.1	-	nC
Gate-Drain Charge	Q_{gd}		-	7.7	-	nC
Body Diode Reverse Recovery Time	T_{rr}	I_{DS}=-10.5A, dI/dt=100A/μs	-	18	-	nS
Body Diode Reverse Recovery Charge	Q_{rr}		-	9	-	nC
DRAIN-SOURCE DIODE CHARACTERISTICS						
Diode Forward Voltage (Note2)	V_{SD}	V_{GS}=0V,I_{SD}=-1A	-	-0.7	-1	V

NOTES:

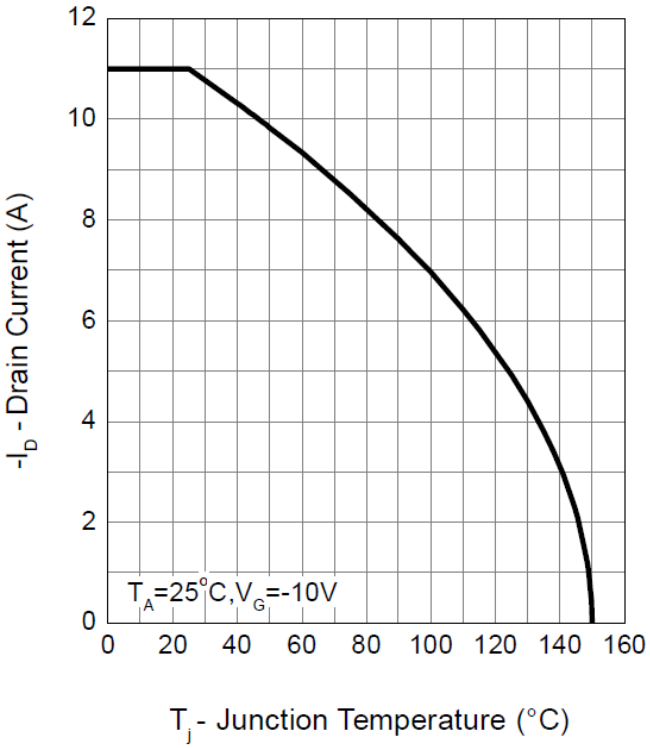
1. Surface Mounted on 1in^2 pad area, t≤ 10sec. $R_{\theta JA}$ steady state t = 999s.
2 Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
3 Guaranteed by design, not subject to production testing

Typical Operating Characteristics

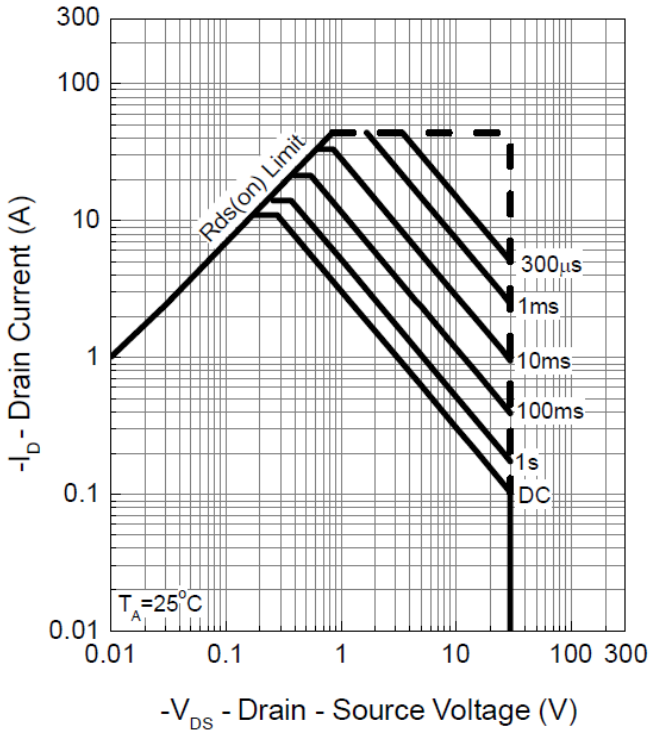
Power Dissipation



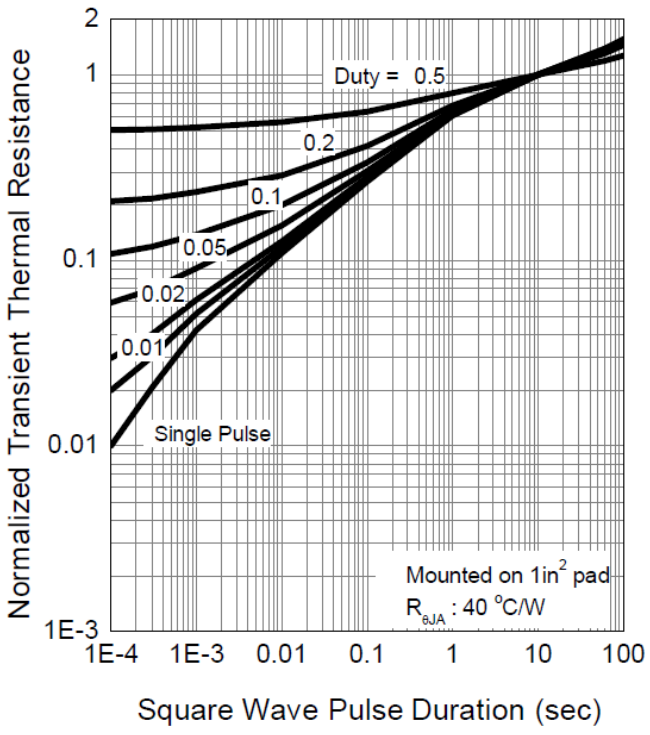
Drain Current



Safe Operation Area

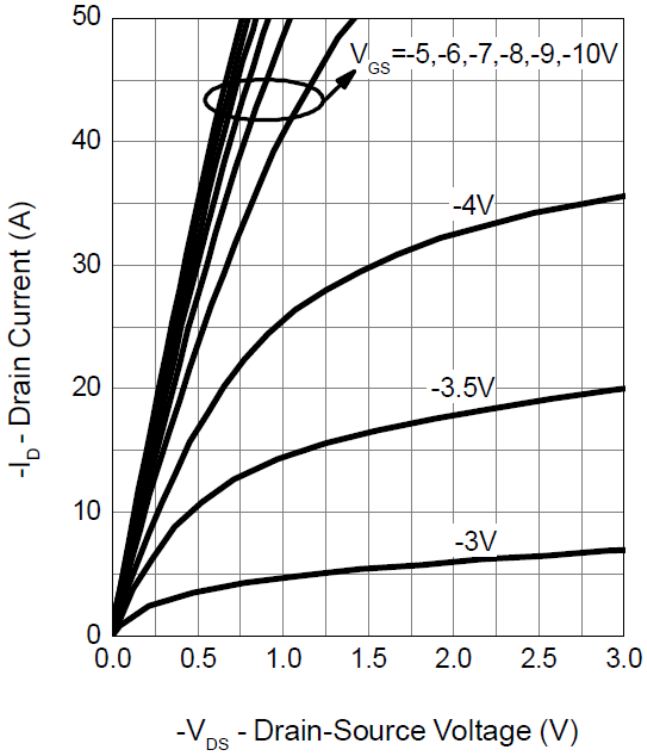


Thermal Transient Impedance

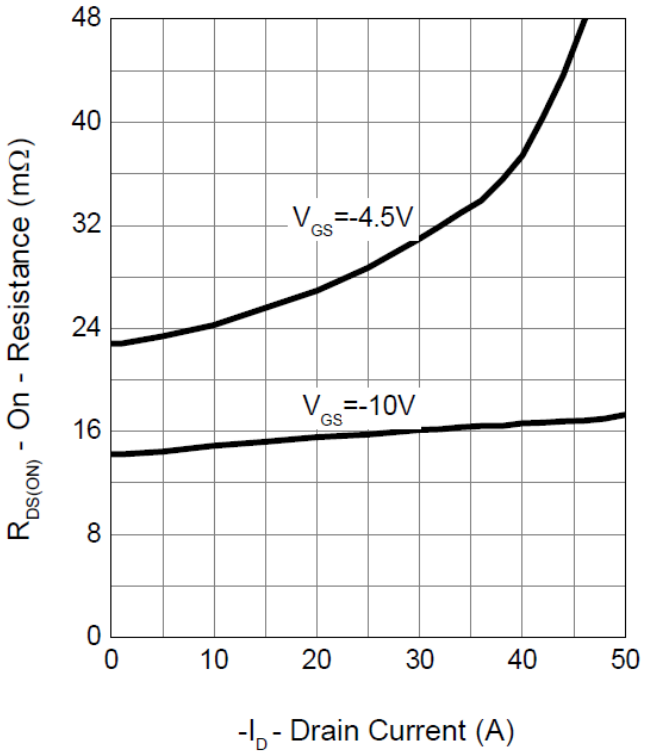


Typical Operating Characteristics(Cont.)

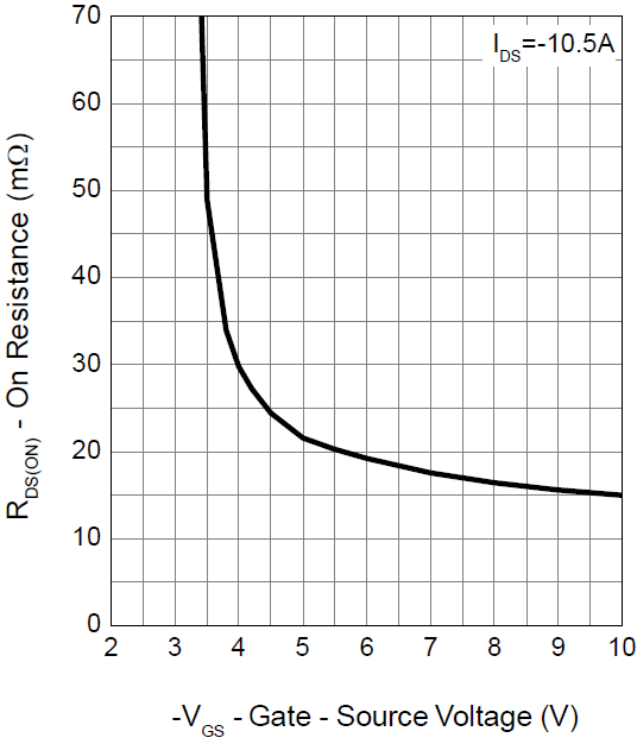
Output Characteristics



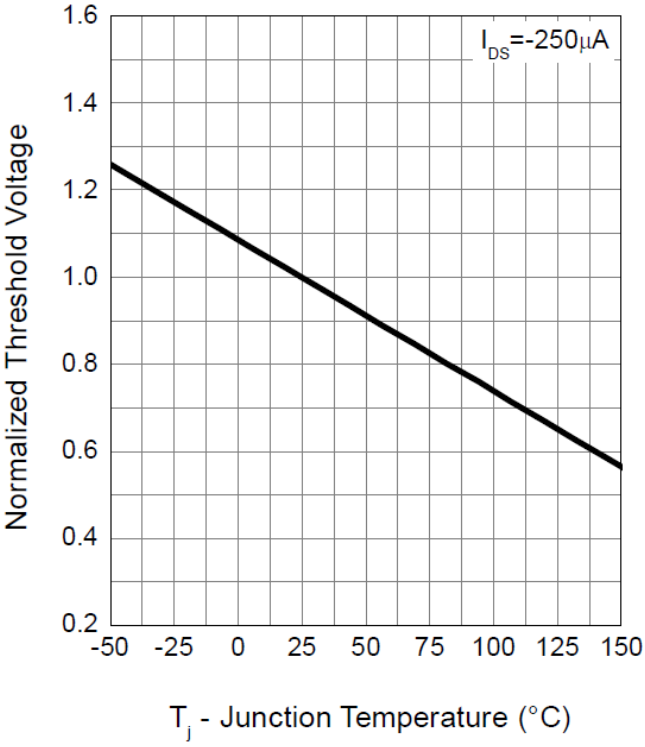
Drain-Source On Resistance



Gate-Source On Resistance

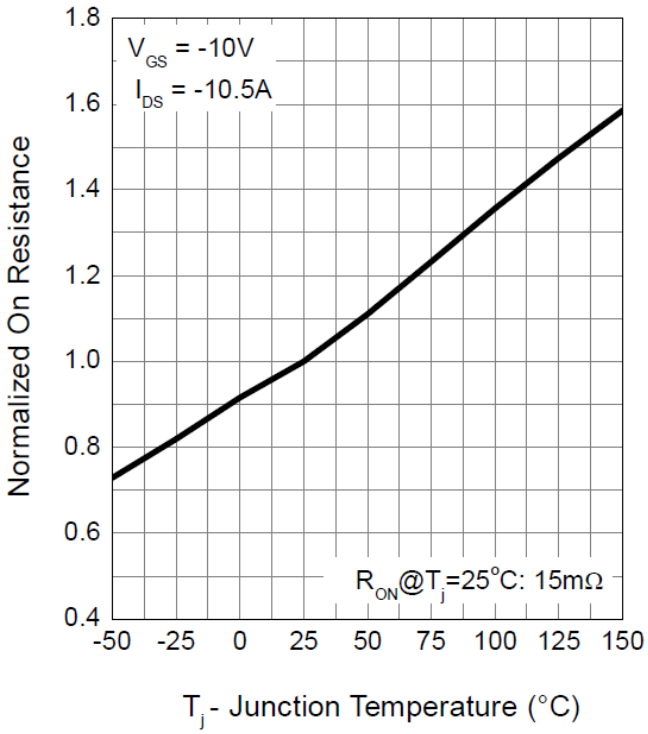


Gate Threshold Voltage

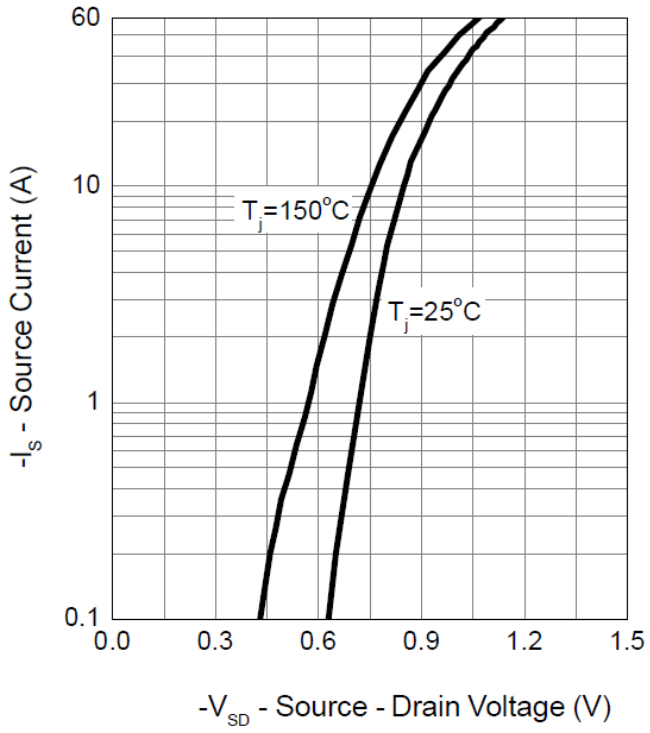


Typical Operating Characteristics (Cont.)

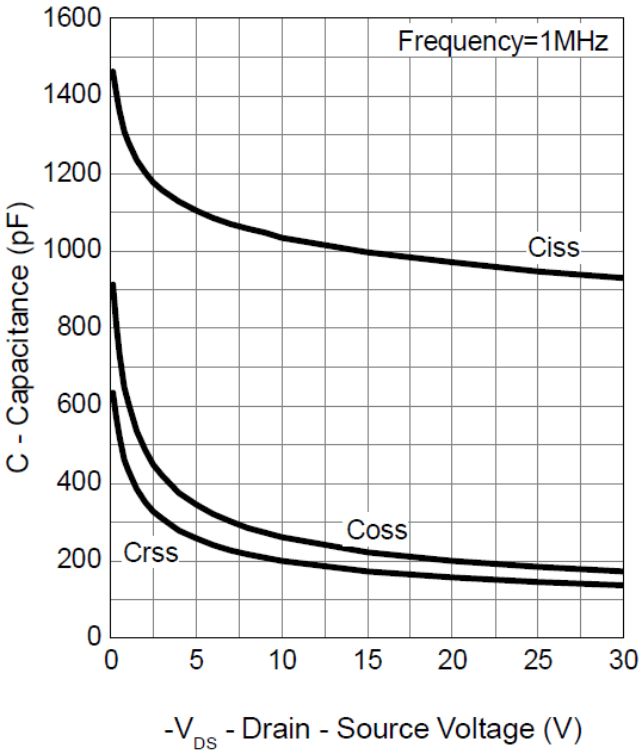
Drain-Source On Resistance



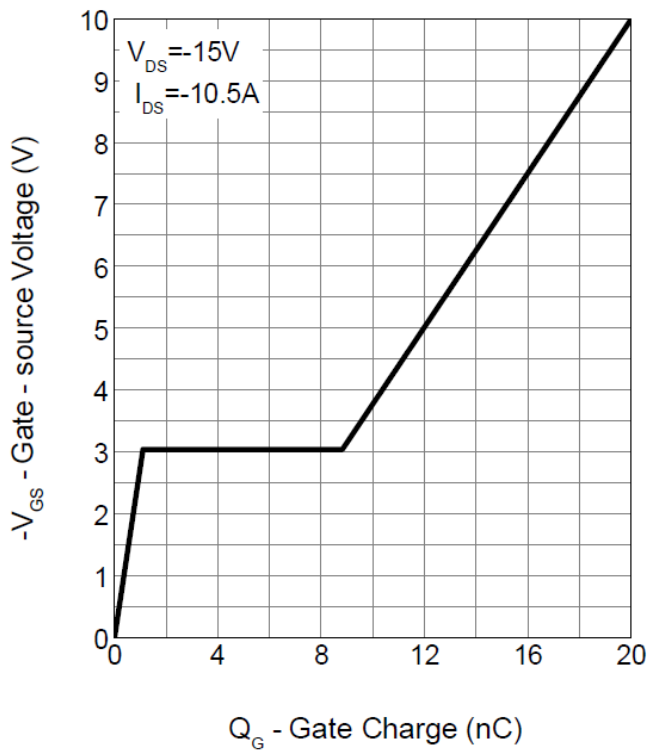
Source-Drain Diode Forward



Capacitance

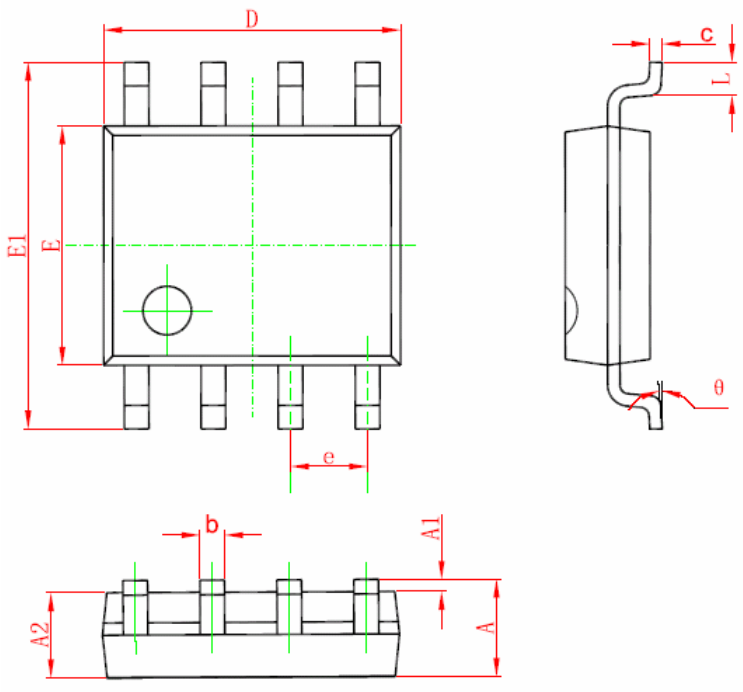


Gate Charge



Package Information

SOP-8 Package



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°

Design Notes