

Description

Features

- SGT LV MOSFET technology
- Low gate charge
- Improved dv/dt capability

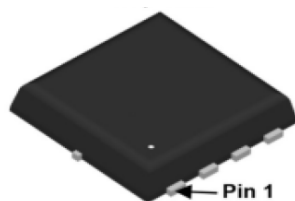
Application

- Power management in telecom
- Motor driving in power tool
- Current switching in DC/DC&AC/DC(SR)

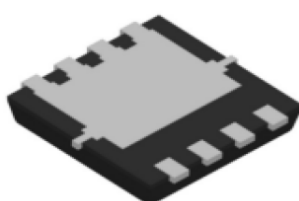
V_{DS}	60	V
$R_{ds(on),typ}@V_{gs}=10V$	4.0	mΩ
$R_{ds(on),typ}@V_{gs}=4.5V$	5.5	mΩ
I_D	120	A



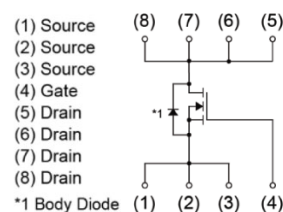
Top View



Bottom View



PDFN5*6 Pin Configuration



Package Marking and Ordering Information

Part	Marking	Package	Packing	Reel Size	Tape Width	Qty
CMS60H12M	S60H12M	PDFN5*6	Reel	NA	NA	5000pcs

Key Performance Parameters

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
$I_{D@Tc=25^{\circ}C}$	Continuous Drain Current, $V_{GS}=10V$	120	A
$I_{D@Tc=100^{\circ}C}$	Continuous Drain Current, $V_{GS}=10V$	75	A
IDM	Pulsed Drain Current ¹	480	A
EAS	Single Pulse Avalanche Energy ⁴	102	mJ
$PD@Tc=25^{\circ}C$	Total Power Dissipation	96	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_j	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ	Max	Units
R _{θJA}	Thermal Resistance Junction-Ambient	53	59	°C/W
R _{θJC}	Thermal Resistance Junction-Case	1.15	1.3	°C/W

Electrical Characteristics (T_J=25 °C, Unless otherwise noted)

Symbol	Parameter	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
BVDSS	Drain-Source Breakdown Voltage	60	--	--	V	V _{GS} =0V, I _D =250uA
R _{DS(ON)}	Static Drain-Source On-Resistance	--	4	5.2	mΩ	V _{GS} =10V, I _D =30A
		--	5.5	7.0		V _{GS} =4.5V, I _D =10A
V _{GS(th)}	Gate Threshold Voltage	1	1.7	2.5	V	V _{GS} =V _{DS} , I _D =250uA
IDSS	Drain-Source Leakage Current	--	--	1	uA	V _{DS} =60V, V _{GS} =0V, T _J =25°C
		--	--	10	uA	V _{DS} =48V, V _{GS} =0V, T _J =125°C
IGSS	Gate-Source Leakage Current	--	--	±100	nA	V _{GS} =±20V, V _{DS} =0V
g _{fs}	Forward Transconductance	--	86	--	S	V _{DS} =10V, I _D =30A
R _g	Gate Resistance	--	1.8	--	Ω	V _{DS} =0V, V _{GS} =0V, f=1MHz
Q _g	Total Gate Charge ^{2,3}	--	39	--	nC	V _{DS} =30V, V _{GS} =10V, I _D =30A
Q _{gs}	Gate-Source Charge ^{2,3}	--	6.2	--		
Q _{gd}	Gate-Drain Charge ^{2,3}	--	9	--		
T _{d(on)}	Turn-On Delay Time ^{2,3}	--	6.5	--	ns	V _{DD} =30V, V _{GS} =10V, R _G =3Ω I _D =30A
T _r	Rise Time ^{2,3}	--	8	--		
T _{d(off)}	Turn-Off Delay Time ^{2,3}	--	41	--		
T _f	Fall Time ^{2,3}	--	15	--		
C _{iss}	Input Capacitance	--	2148	--	pF	V _{DS} =30V, V _{GS} =0V, f=1MHz
C _{oss}	Output Capacitance	--	659	--		
C _{rss}	Reverse Transfer Capacitance	--	53	--		

Diode Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Units
T _{rr}	Body Diode Reverse Recovery Time	IF=20A, di/dt=100A/us	--	39	--	ns
Q _{rr}	Body Diode Reverse Recovery Charge		--	45	--	nC
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =30A, T _J =25°C	--	--	1.3	V

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.
4. The EAS data shows Max. rating. The test condition is V_{DD}=30V, V_{GS}=10V, L=0.1mH.

Typical Performance Characteristics

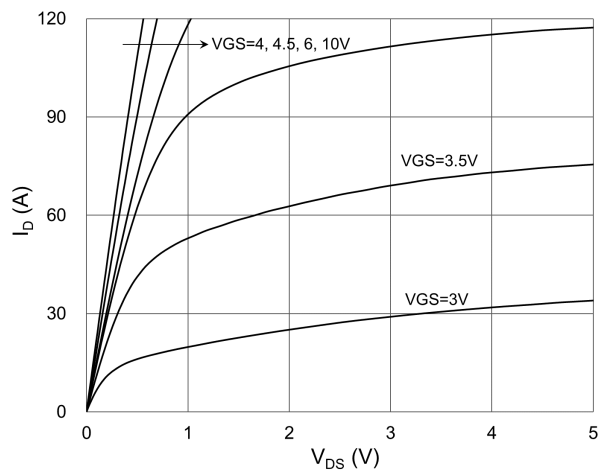
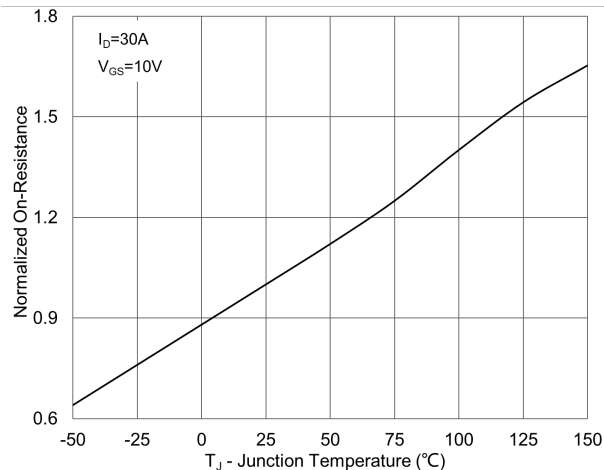
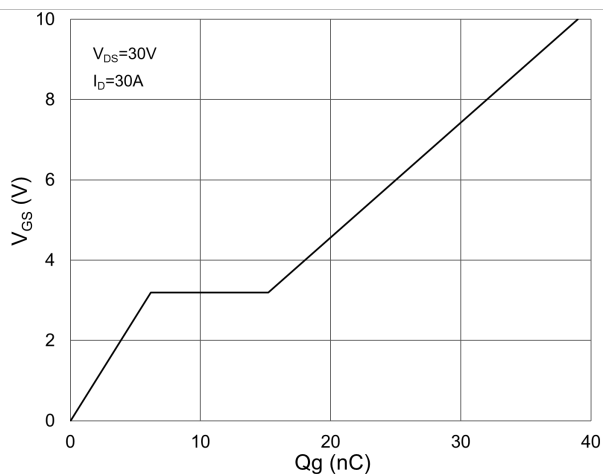
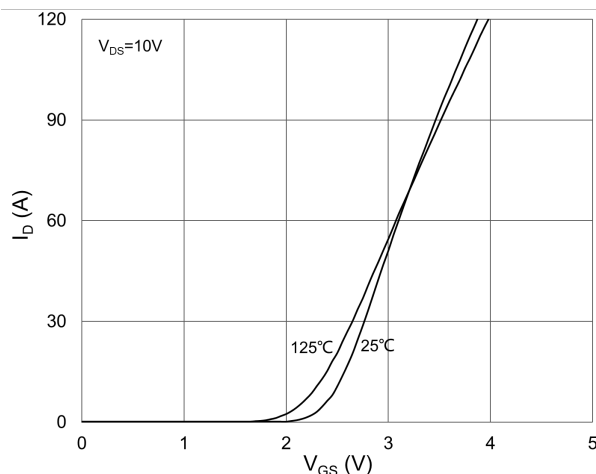
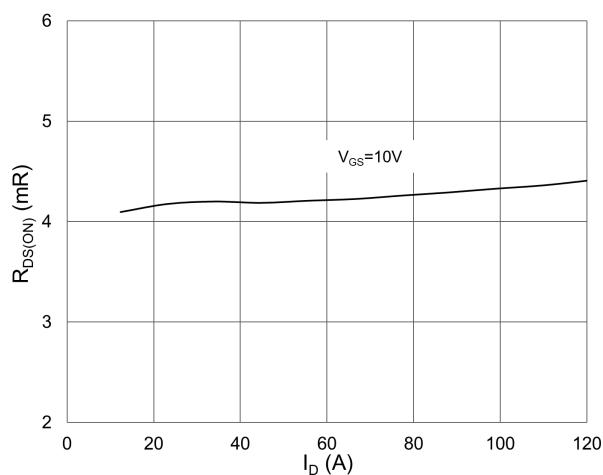
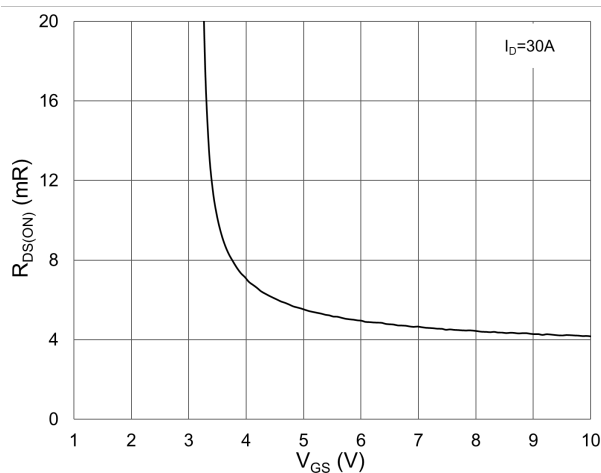
Fig1 Output Characteristics

Fig2 Normalized $R_{DS(on)}$ vs. T_J

Fig3 Gate Charge Waveform

Fig4 Transfer Characteristics

Fig5 $R_{DS(on)}$ vs. Drain Current and Gate Voltage

Fig6 $R_{DS(on)}$ vs. Gate Voltage


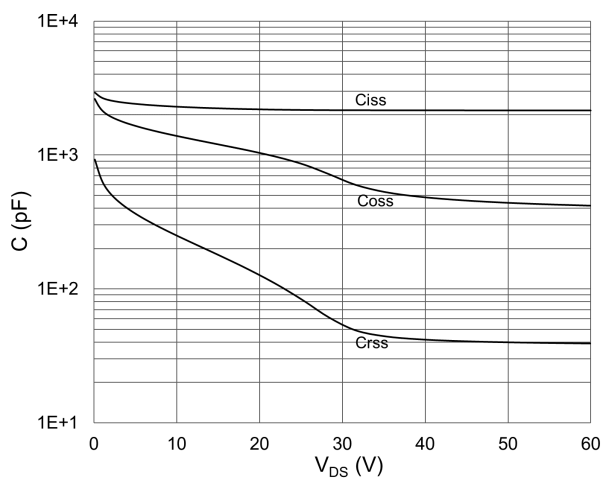
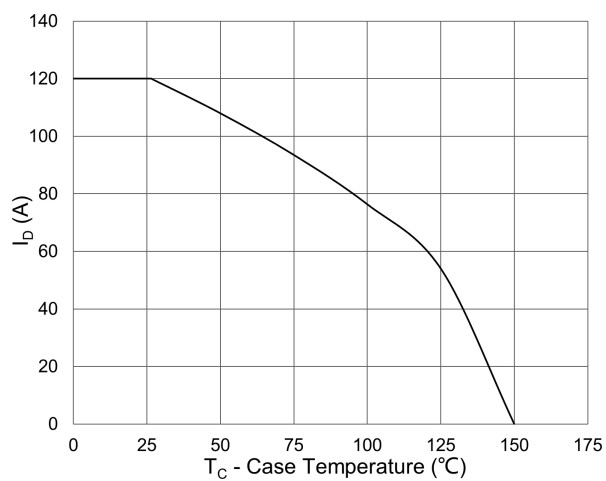
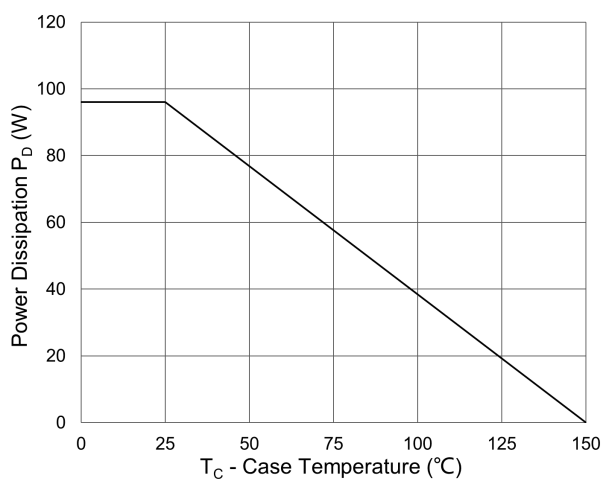
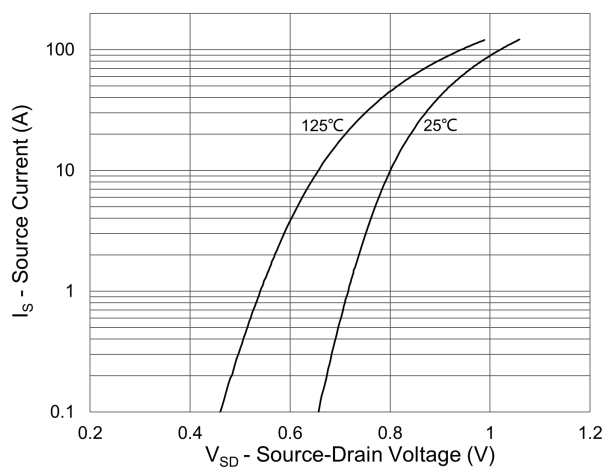
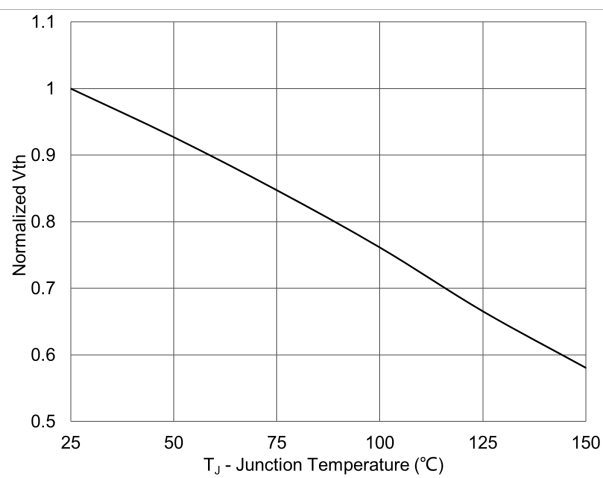
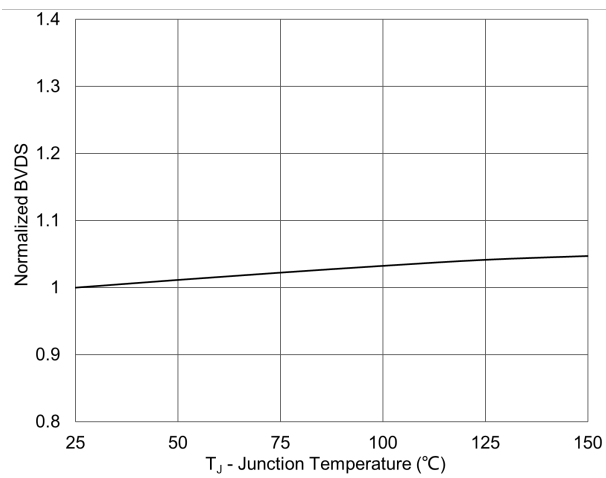
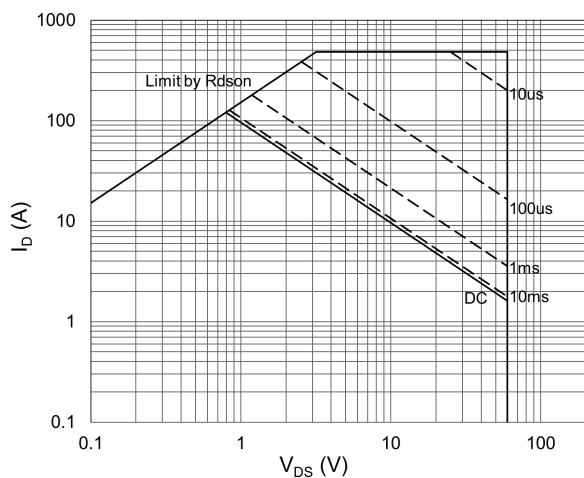
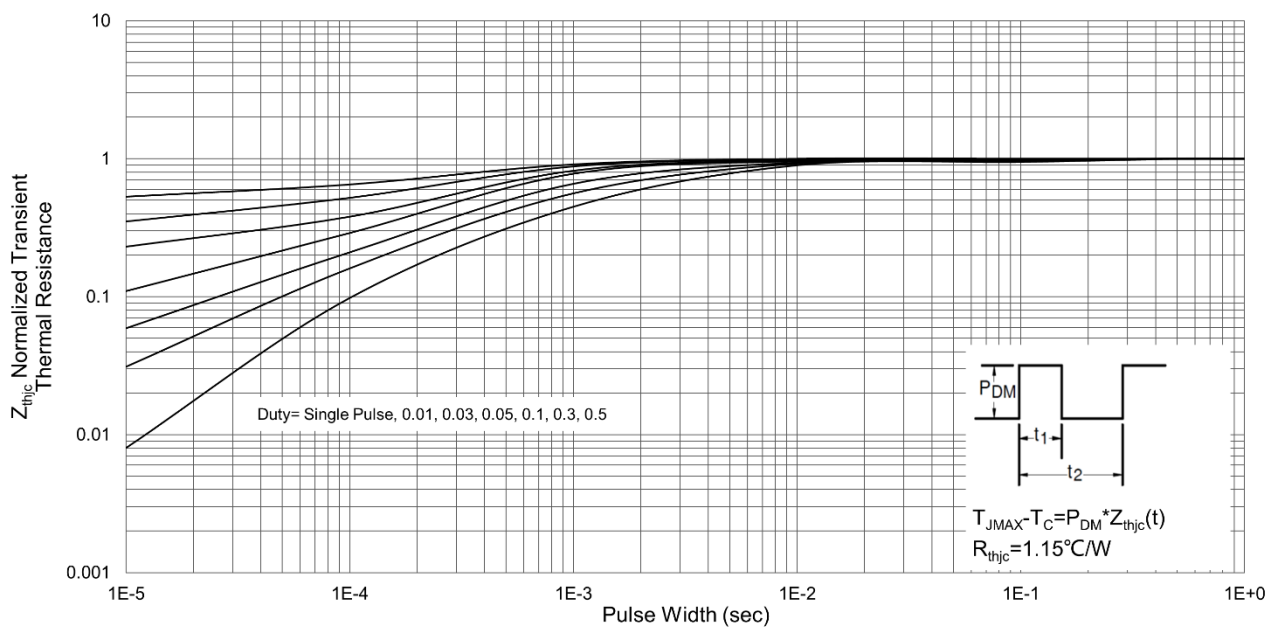
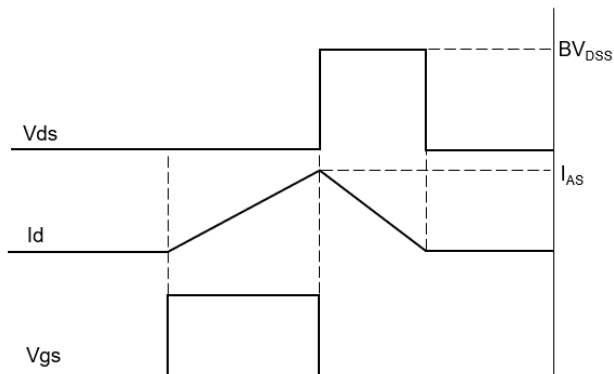
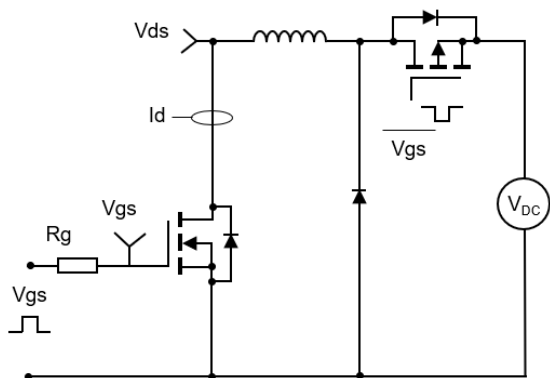
Fig7 Capacitance Characteristics

Fig8 Drain Current Derating

Fig9 Power Dissipation

Fig10 Source-Drain Diode Forward Characteristics

Fig11 Normalized Threshold Voltage vs. T_J

Fig12 Normalized Breakdown Voltage vs. T_J


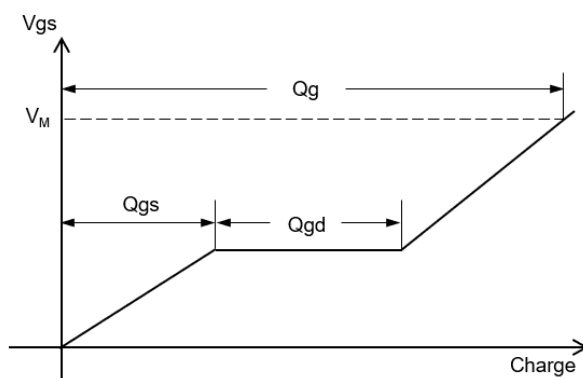
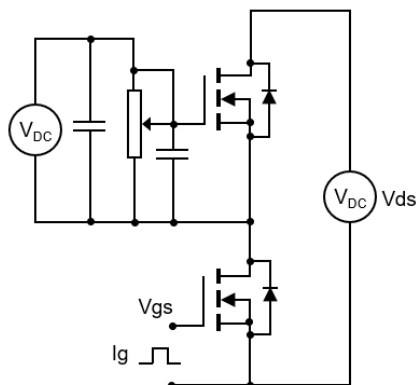
Fig13 Maximum Safe Operation Area

Fig14 Normalized Transient Impedance


Test Circuit & Waveform

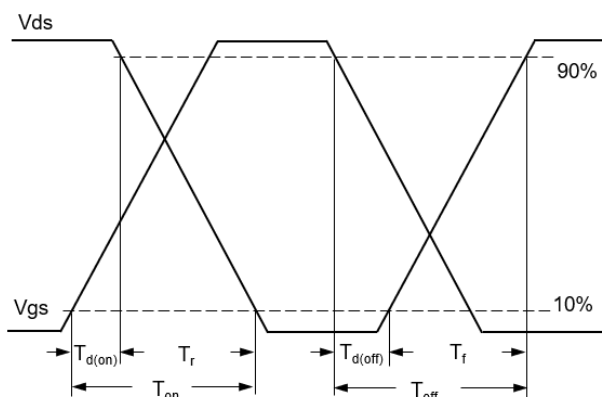
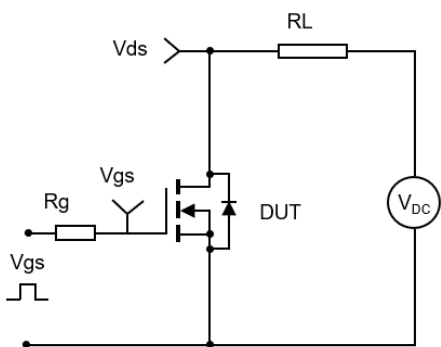
1. Unclamped Inductive Switching Test Circuit & Waveforms



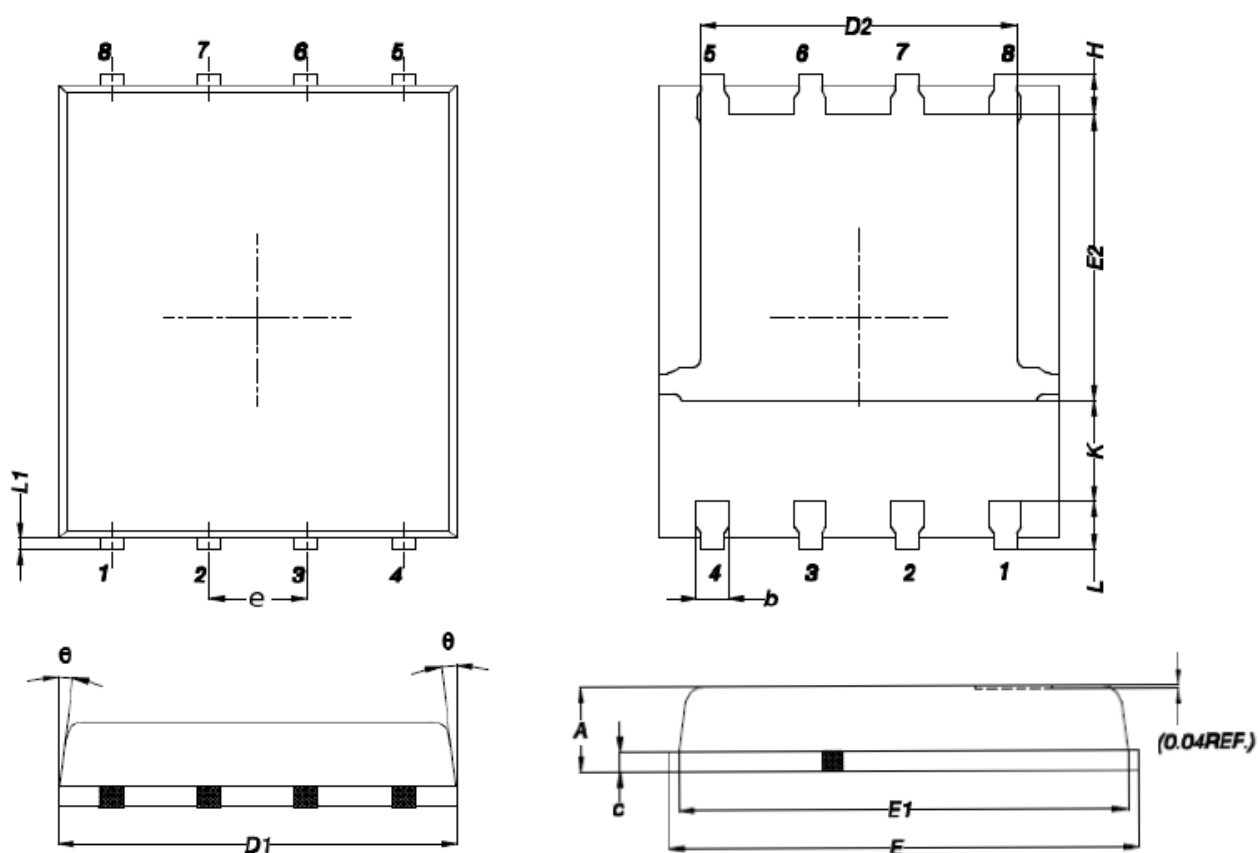
2. Gate Charge Test Circuit & Waveform



3. Resistive Switching Test Circuit & Waveform



PDFN5*6 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.200	0.850	0.047	0.031
b	0.510	0.330	0.020	0.013
C	0.300	0.200	0.012	0.008
D1	5.400	4.800	0.212	0.189
D2	4.310	3.610	0.170	0.142
E	6.300	5.850	0.248	0.230
E1	5.960	5.450	0.235	0.215
E2	3.920	3.300	0.154	0.130
e	1.27BSC		0.05BSC	
H	0.650	0.380	0.026	0.015
K	---	1.100	---	0.043
L	0.710	0.380	0.028	0.015
L1	0.250	0.050	0.009	0.002
θ	12°	0°	12°	0°