

Description

Features

- SGT LV MOSFET technology
- Excellent Qg*Ron product(FOM)
- Extremely low on-resistance(Ron)

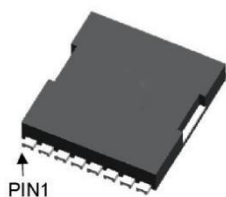
Application

- Battery management
- High current switching
- UPS

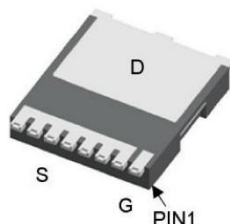
V_{DS}	150	V
$R_{ds(on),typ}@V_{gs}=10V$	3.3	mΩ
I_D	250	A



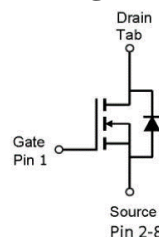
Top View



Bottom View



Pin Configuration



Package Marking and Ordering Information

Part	Marking	Package	Packing	Reel Size	Tape Width	Qty
HMS250N15LL	HMS250N15LL	Toll-8	Reel	330*28.5mm	24mm	2000pcs

Key Performance Parameters

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	±20	V
$I_D@T_c=25^{\circ}C$	Continuous Drain Current, $V_{GS}=10V$	250	A
$I_D@T_c=100^{\circ}C$	Continuous Drain Current, $V_{GS}=10V$	175	A
IDM	Pulsed Drain Current	750	A
EAS	Single Pulse Avalanche Energy	1037	mJ
$PD@T_c=25^{\circ}C$	Total Power Dissipation	416	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	42	47	°C/W
R _{θJC}	Thermal Resistance Junction-Case	0.26	0.3	°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	150	--	--	V	V _{GS} =0V, I _D =250uA
R _{DS(ON)}	Static Drain-Source On-Resistance	--	3.3	4	mΩ	V _{GS} =10V, I _D =50A
V _{GS(th)}	Gate Threshold Voltage	2	3	4	V	V _{GS} =V _{DS} , I _D =250uA
IDSS	Drain-Source Leakage Current	--	--	1	uA	V _{DS} =150V, V _{GS} =0V, T _J =25°C
		--	--	10	uA	V _{DS} =120V, V _{GS} =0V, T _J =125°C
IGSS	Gate-Source Leakage Current	--	--	±100	nA	V _{GS} =±20V, V _{DS} =0V
g _{fs}	Forward Transconductance	--	96	--	S	V _{DS} =10V, I _D =50A
R _g	Gate Resistance	--	5	--	Ω	V _{DS} =0V, V _{GS} =0V, f=1MHz
Q _g	Total Gate Charge	--	115	--	nC	V _{DS} =75V, V _{GS} =10V, I _D =50A
Q _{gs}	Gate-Source Charge	--	41	--		
Q _{gd}	Gate-Drain Charge	--	26	--		
T _{d(on)}	Turn-On Delay Time	--	52	--	ns	V _{DD} =75V, V _{GS} =10V, R _G =3Ω I _D =50A
T _r	Rise Time	--	91	--		
T _{d(off)}	Turn-Off Delay Time	--	92	--		
T _f	Fall Time	--	63	--		
C _{iss}	Input Capacitance	--	8090	--	pF	V _{DS} =75V, V _{GS} =0V, f=1MHz
C _{oss}	Output Capacitance	--	806	--		
C _{rss}	Reverse Transfer Capacitance	--	29	--		

Diode Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Units
T _{rr}	Body Diode Reverse Recovery Time	IF=50A, di/dt=100A/us	--	145	--	ns
Q _{rr}	Body Diode Reverse Recovery Charge		--	280	--	nC
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =30A, T _J =25°C	--	--	1.2	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}=75V, V_{GS}=10V, L=0.5mH.

Typical Performance Characteristics

Fig1 Output Characteristics

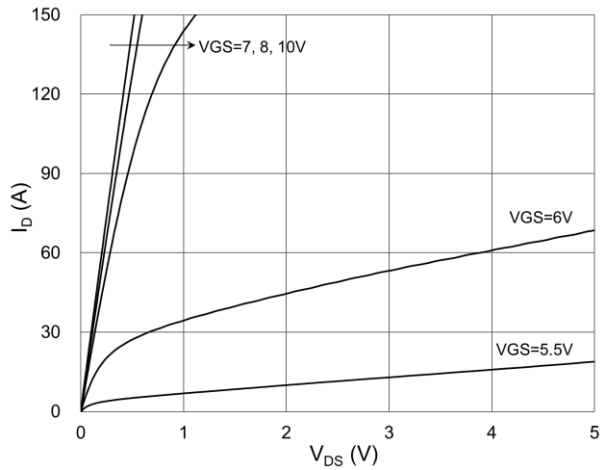


Fig2 Normalized $R_{DS(on)}$ vs. T_J

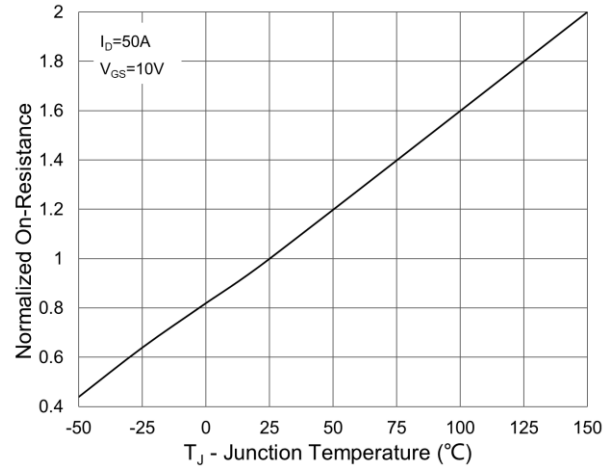


Fig3 Gate Charge Waveform

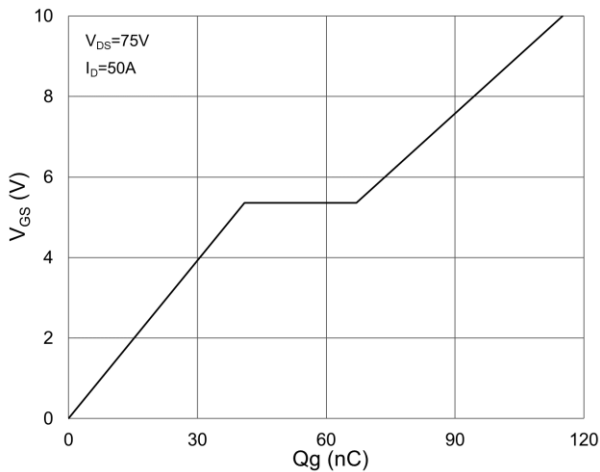


Fig4 Transfer Characteristics

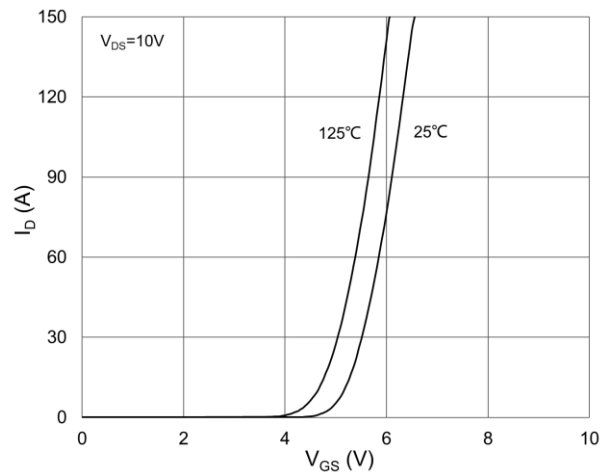


Fig5 $R_{DS(on)}$ vs. Drain Current and Gate Voltage

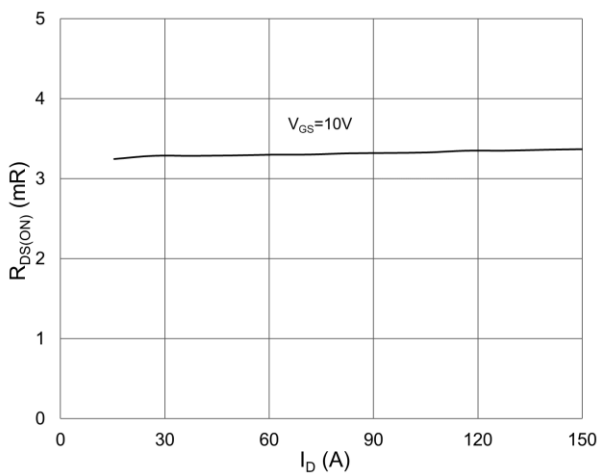


Fig6 $R_{DS(on)}$ vs. Gate Voltage

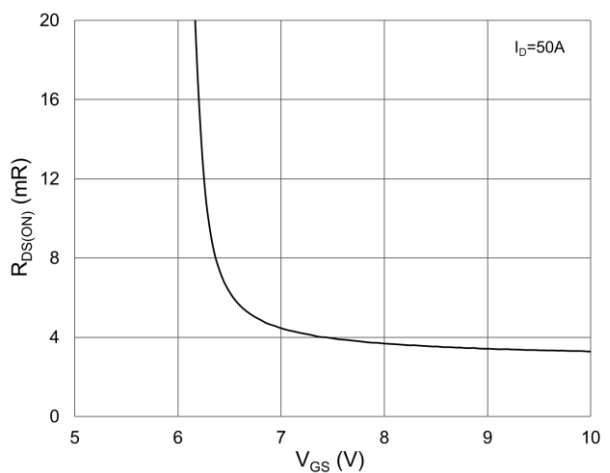


Fig7 Capacitance Characteristics

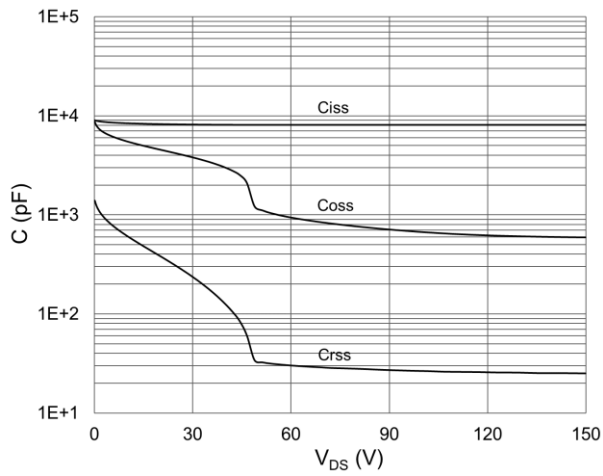


Fig8 Drain Current Derating

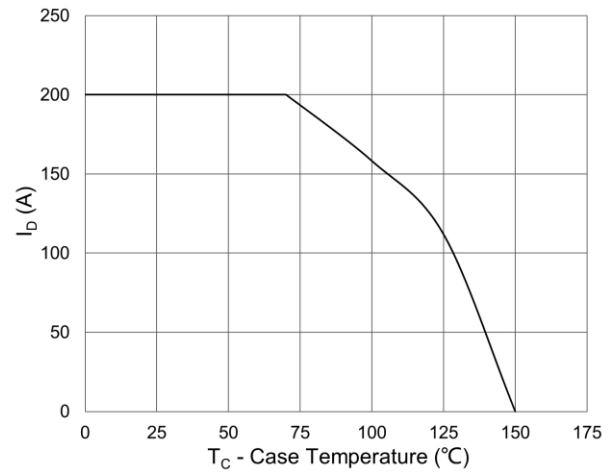


Fig9 Power Dissipation

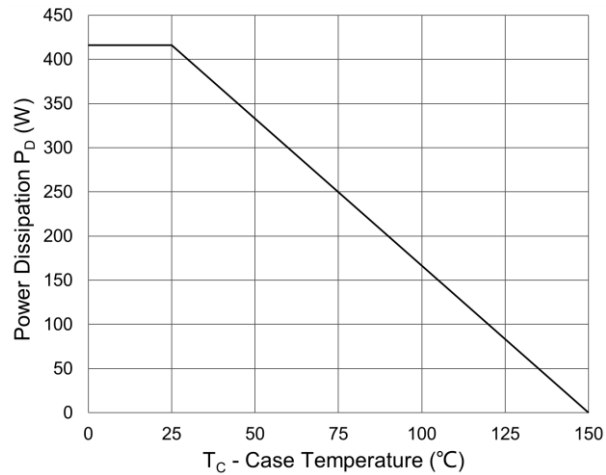


Fig10 Source-Drain Diode Forward Characteristics

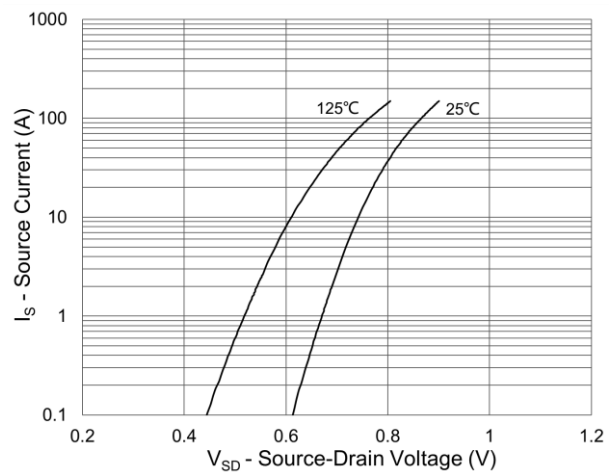


Fig11 Normalized Threshold Voltage vs. T_J

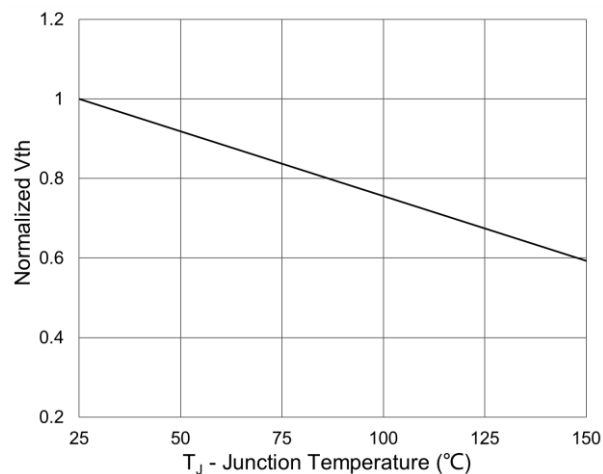


Fig12 Normalized Breakdown Voltage vs. T_J

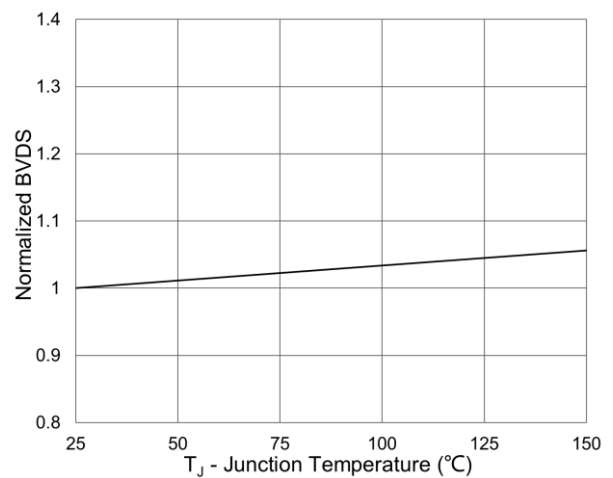


Fig13 Maximum Safe Operation Area

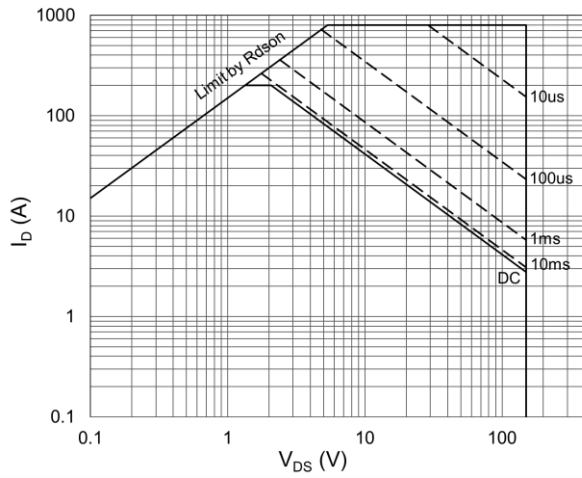
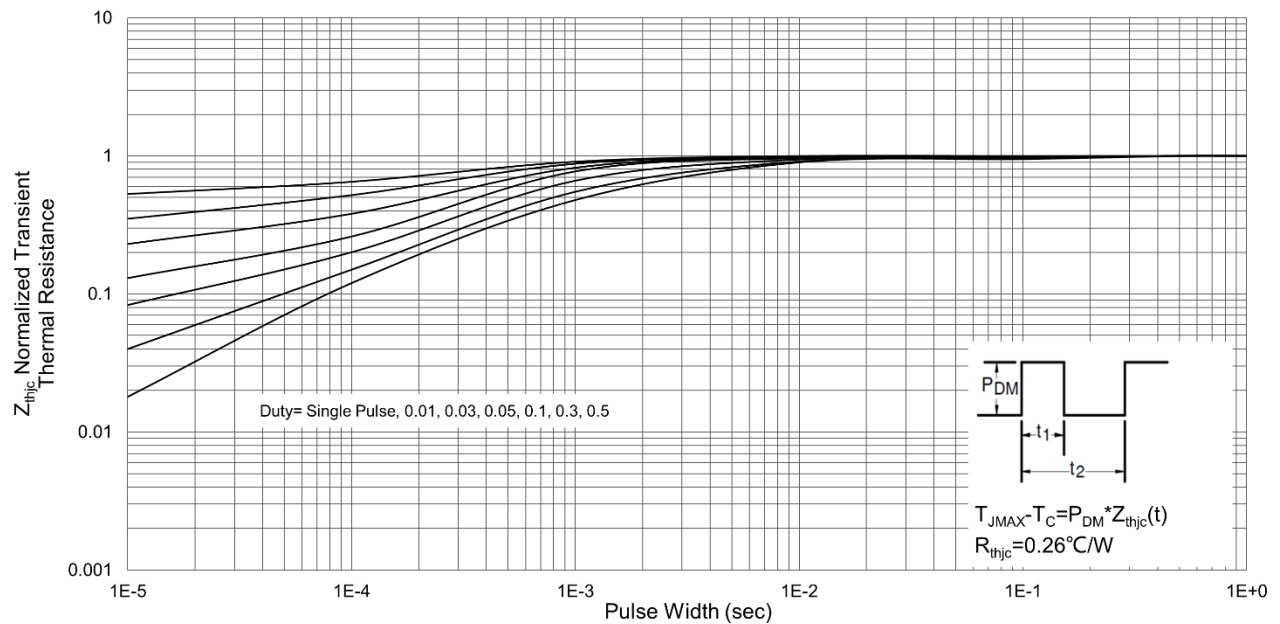
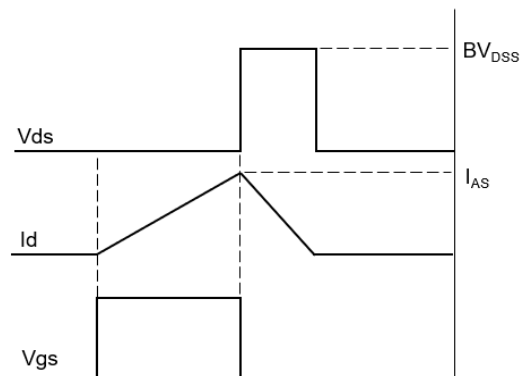
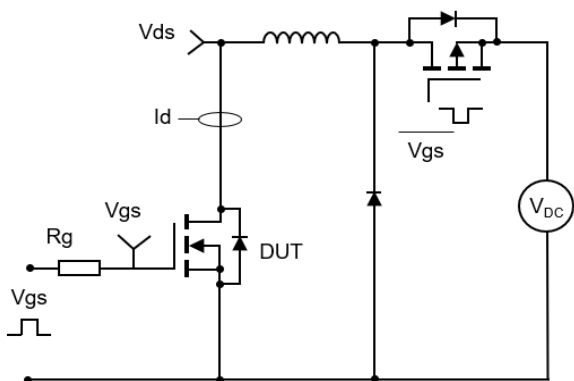


Fig14 Normalized Transient Impedance

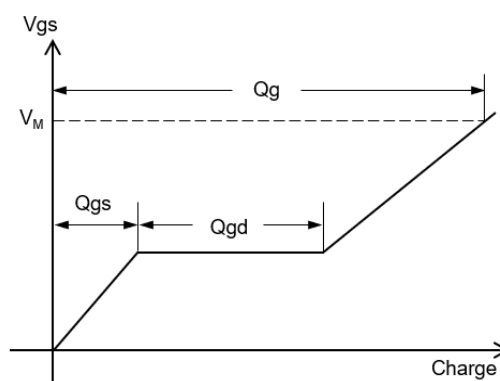
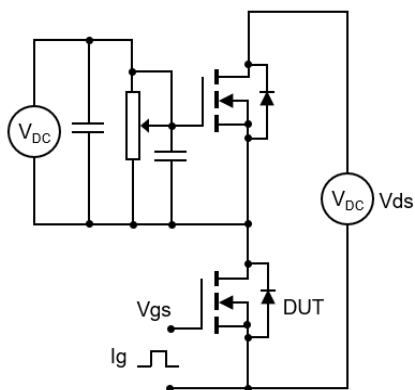


Test Circuit & Waveform

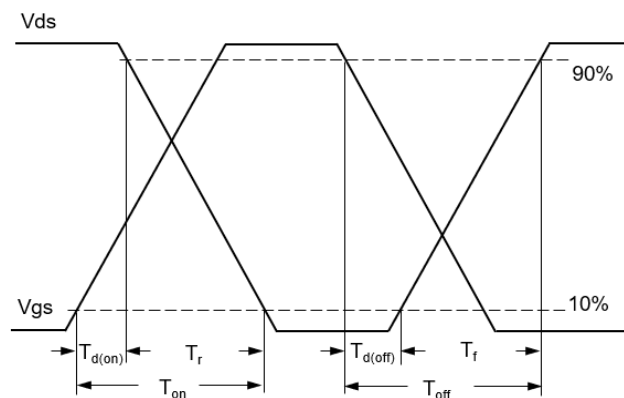
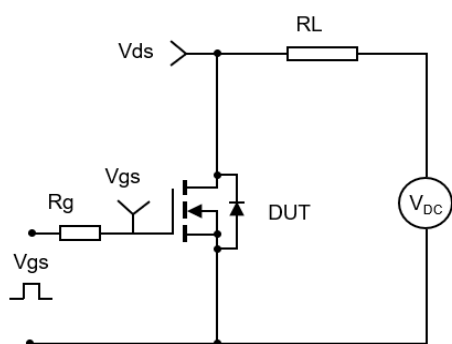
1. Unclamped Inductive Switching Test Circuit & Waveform



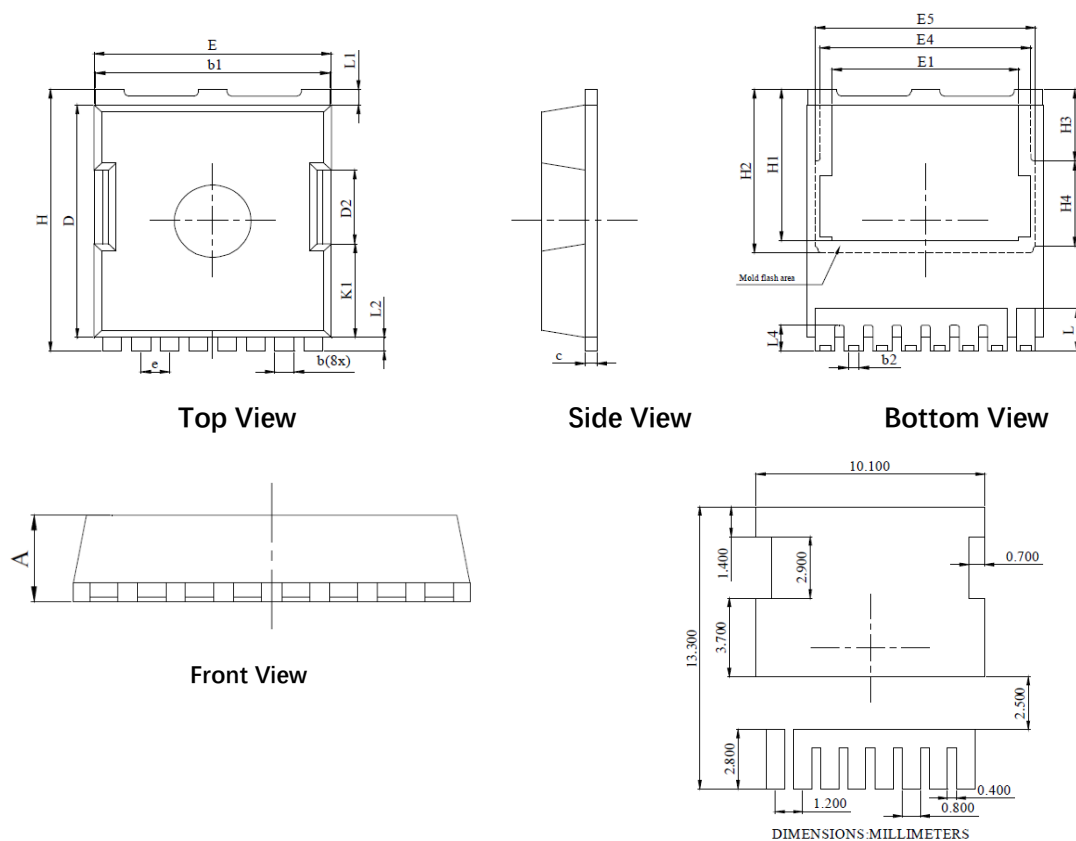
2. Gate Charge Test Circuit & Waveform



3. Resistive Switching Test Circuit & Waveform



Toll-8 Package Information



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
b	0.70	0.80	0.90
b1	9.70	9.80	9.90
b2		0.46	0.50
c	0.40	0.50	0.60
D	10.28	10.38	10.58
D2		3.30	
E	9.70	9.90	10.10
E1		7.80	
E4		8.80	
E5		9.20	
e		1.20 (BSC)	
H	11.48	11.68	11.88
H1	6.55	6.75	6.85
H2		7.30	
H3		3.20	
H4		3.80	
K1		4.18	
L	1.70	1.90	2.10
L1		0.70	
L2		0.60	
L4	1.00	1.15	1.30