

SGT 30V Dual Asymmetric N-Channel MOSFET (30V,48A)

PRODUCT SUMMARY

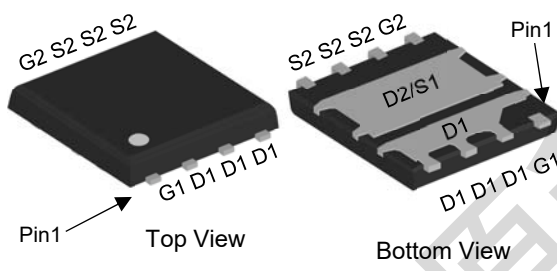
V_{DS}	I_D	$R_{DS(on)}$ (m Ω) Typ.
30V	48A	5.2@ $V_{GS} = 10V$, $I_D=20A$
		6.5@ $V_{GS} = 4.5V$, $I_D=10A$

Features

- ◇ SGT Technology
- ◇ Dual Dies Package and Minimize Board Space
- ◇ Lower $R_{DS(ON)}$ to Minimize Conduction Losses
- ◇ Excellent $Q_g \times R_{DS(ON)}$ product (FOM)
- ◇ Lead (Pb) -free and halogen-free

Applications

- ◇ Motor control and drive
- ◇ Power Tool Application
- ◇ Wireless charging coil drive
- ◇ DC/DC Converters in Computing, Servers, and POL

PDFN5*6B-8L  Top View Bottom View		TOP Marking  ET6320T XXXXXX XXXXXX:D/C
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Absolute Maximum Ratings (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current (Continuous)@T _A =25°C	48	A
	Drain Current (Continuous)@T _A =75°C	30	A
I_{DM}	Drain Current (Pulsed) ^a	144	A
P_D	Total Power Dissipation @T _c =25°C	24	W
	Total Power Dissipation @T _c =75°C	15	W
EAS	Avalanche energy, single pulsed	68	mJ
I_S	Maximum Diode Forward Current	48	A
T _j , T _{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
R _{QJA}	Thermal Resistance Junction to Ambient (PCB mounted) ^b	55	°C/W

a: Repetitive Rating: Pulse width limited by the maximum junction temperature.

b: 1-in² 2oz Cu PCB board

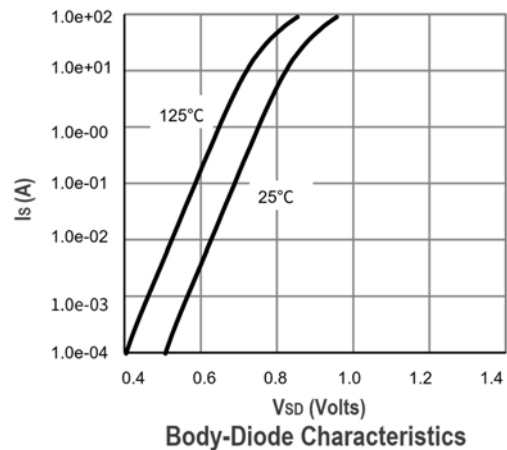
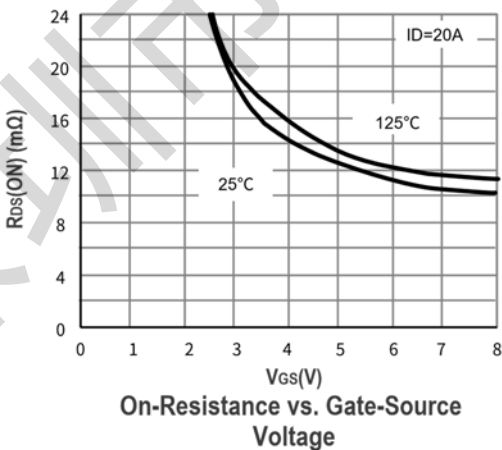
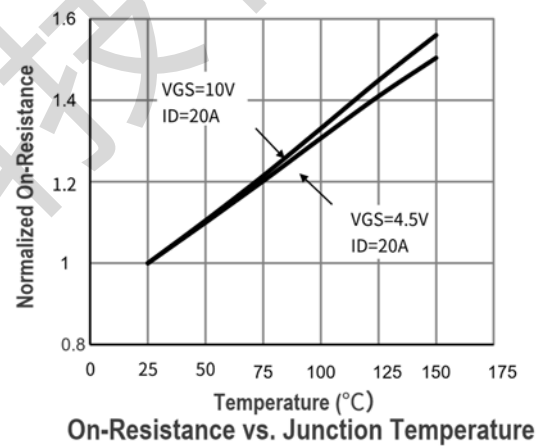
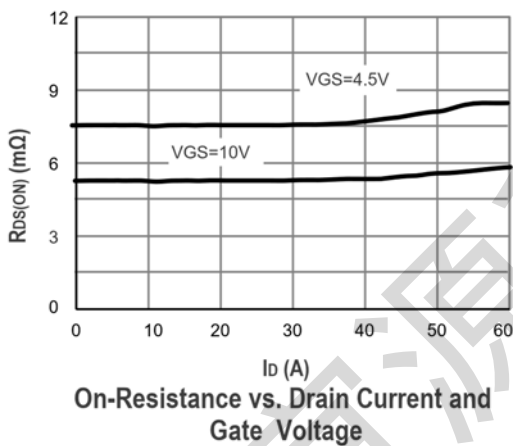
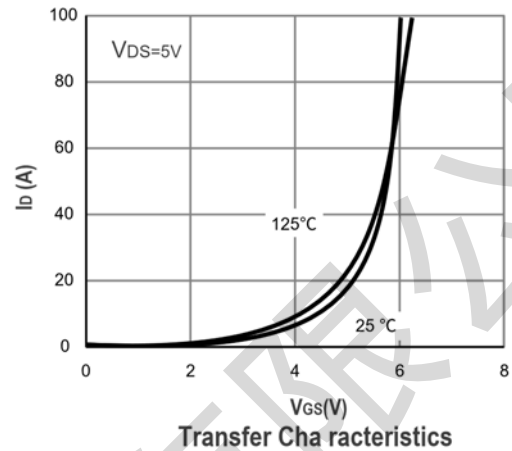
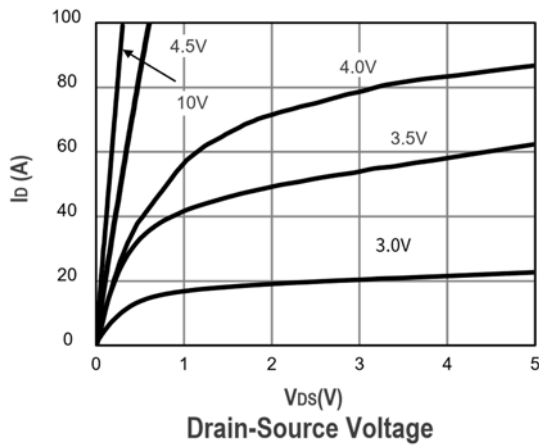


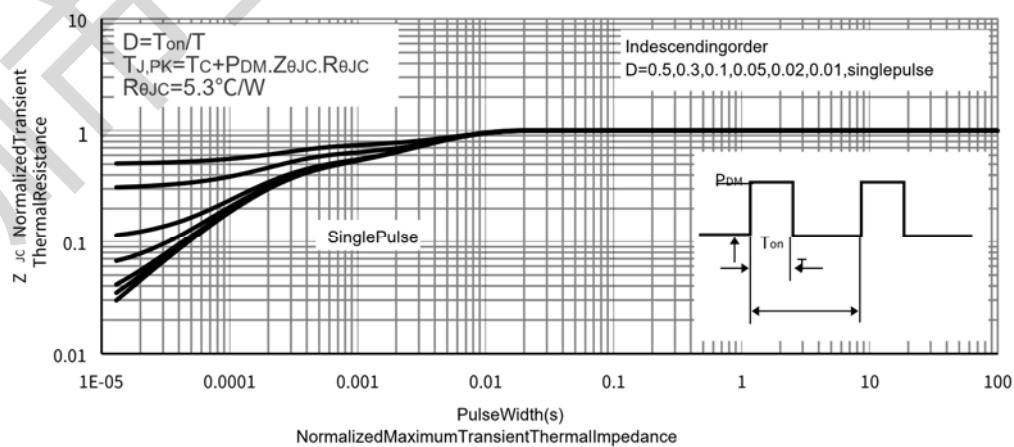
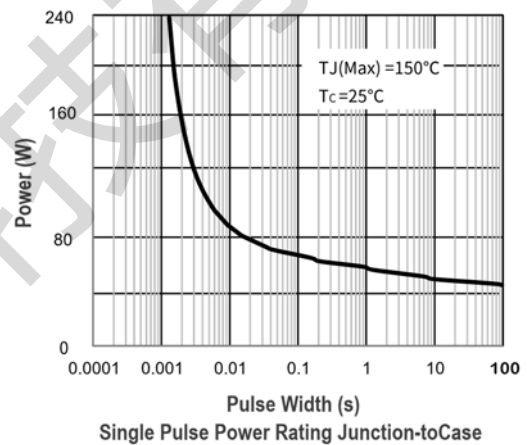
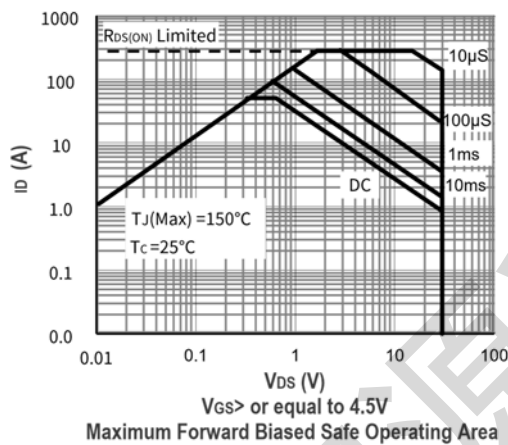
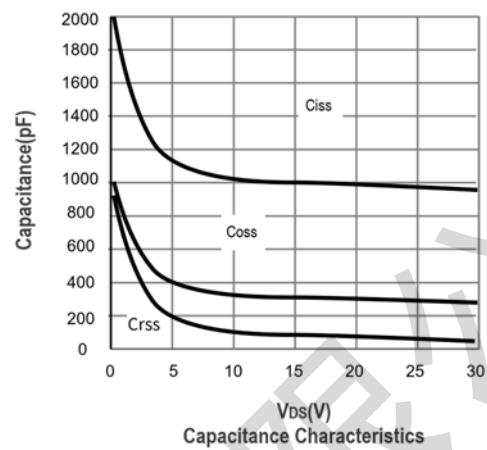
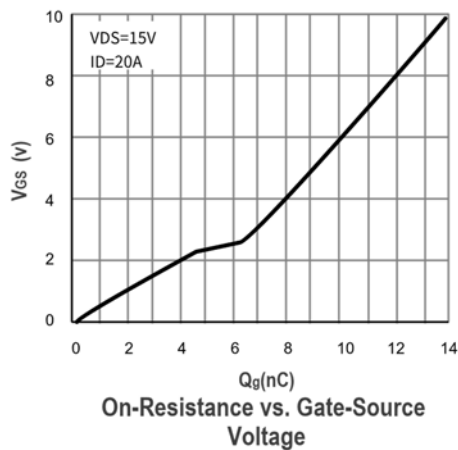
Electrical Characteristics (TA=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	-	-	±100	nA
• On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1.0	1.5	2.2	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	-	5.2	6.6	mΩ
		V _{GS} =4.5V, I _D =10A	-	6.5	8.0	
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =20A		75		S
• Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	1095	-	PF
C _{oss}	Output Capacitance		-	275	-	
C _{rss}	Reverse Transfer Capacitance		-	28	-	
• Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =15V, I _D =20A, V _{GS} =10V	-	14	-	nC
Q _{gs}	Gate-Source Charge		-	4.5	-	
Q _{gd}	Gate-Drain Charge		-	2.2	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _D =20A, V _{GEN} =10V, R _G =6Ω	-	8	-	nS
t _r	Turn-on Rise Time		-	15.1	-	
t _{d(off)}	Turn-off Delay Time		-	17.2	-	
t _f	Turn-off Fall Time		-	2.4	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =20A	-	-	1.2	V
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.5	-	Ω

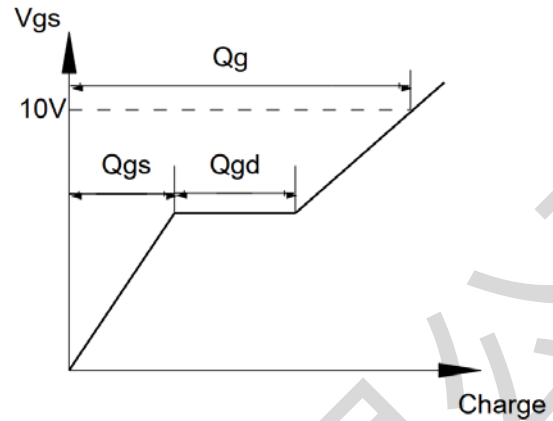
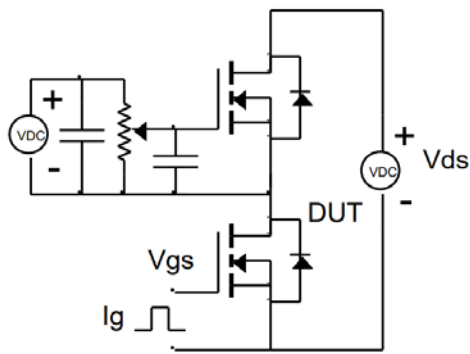
Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

Typical Characteristics Curves (Ta=25°C, unless otherwise note)

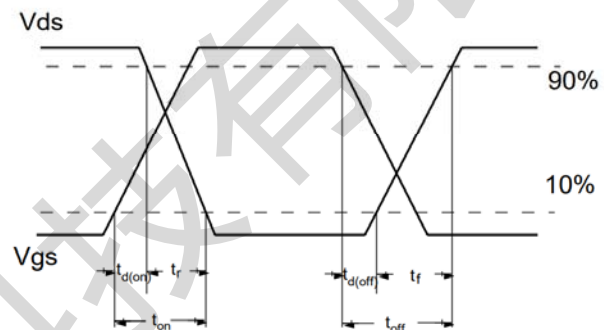
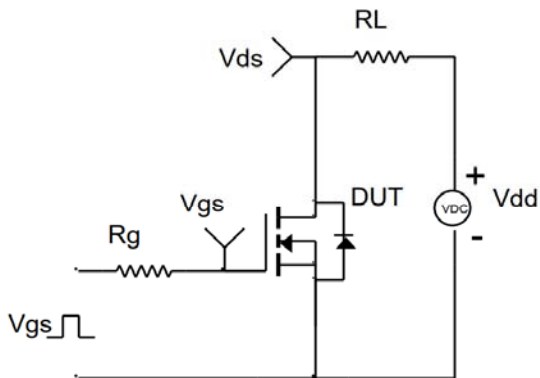




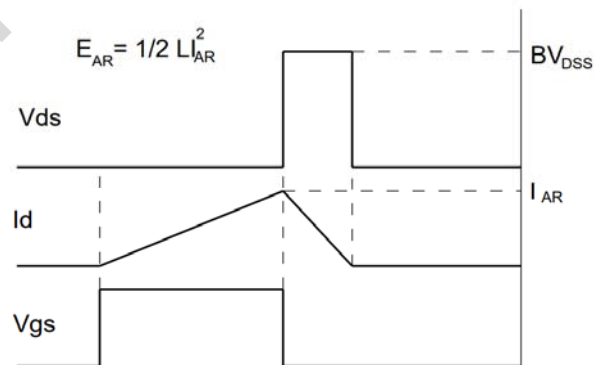
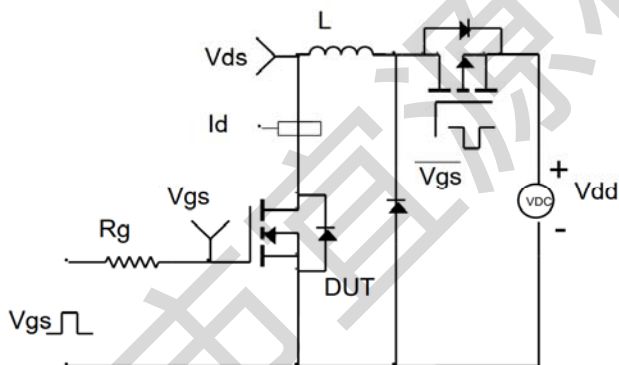
Gate Charge Test Circuit & Waveforms



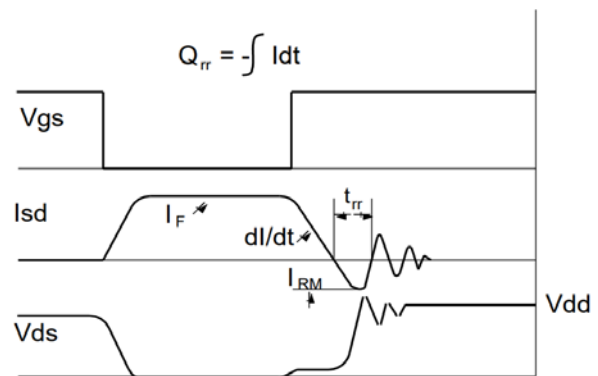
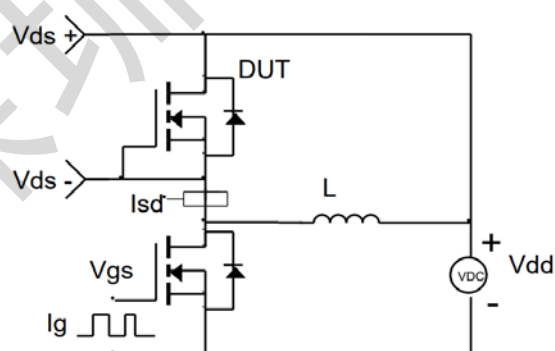
Resistive Switching Test Circuit & Waveforms



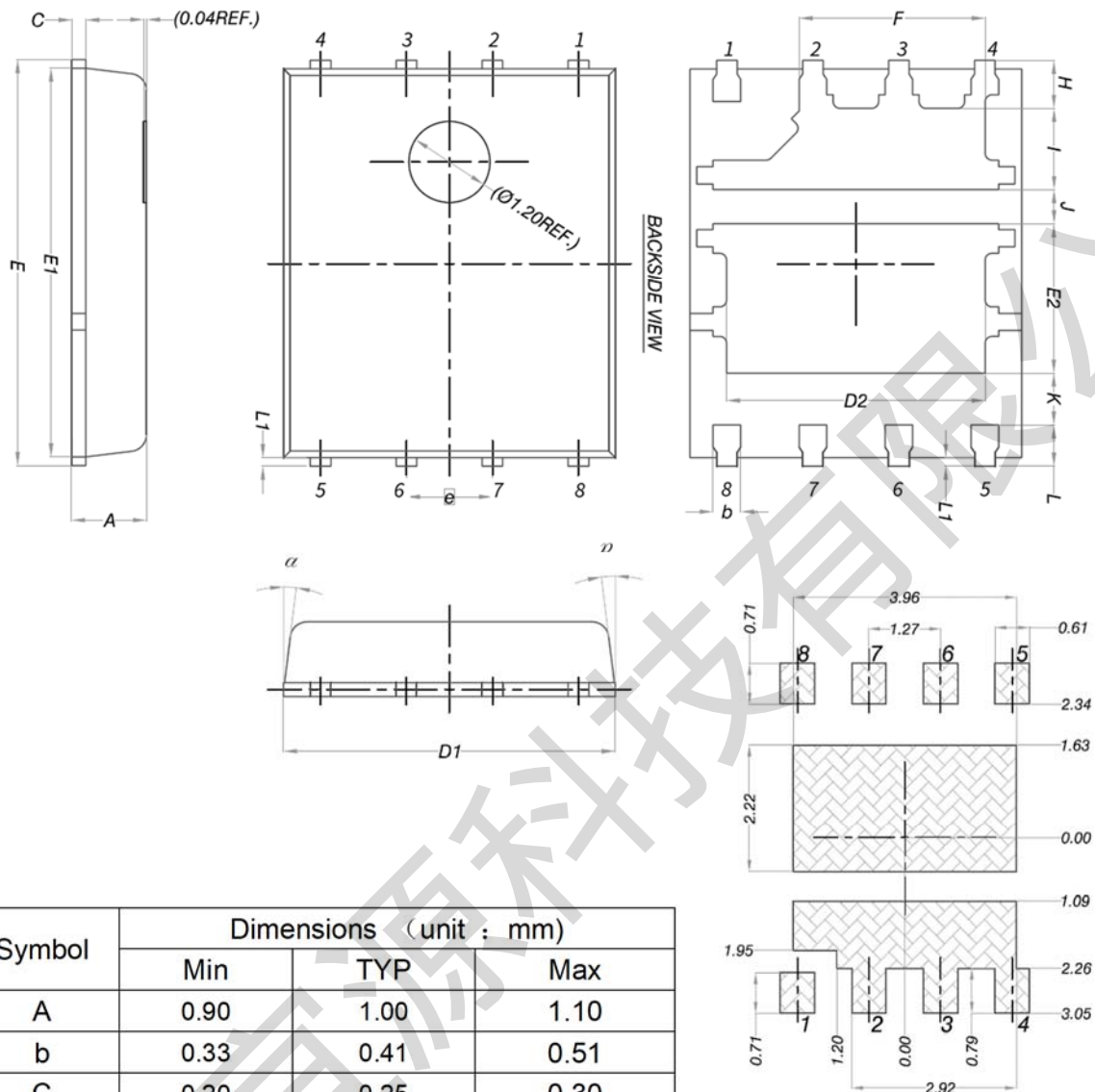
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



PDFN5*6B-8L Package Outline Data



Symbol	Dimensions (unit : mm)		
	Min	TYP	Max
A	0.90	1.00	1.10
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	2.02	2.22	2.42
e	1.27BSC		
F	2.55	2.75	2.90
H	0.61	0.71	0.81
I	1.10	1.20	1.30
J	0.40	0.50	0.60
K	0.50	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
a	-	10°	12°