

N-Channel Enhancement-Mode MOSFET (30V,64A)

PRODUCT SUMMARY

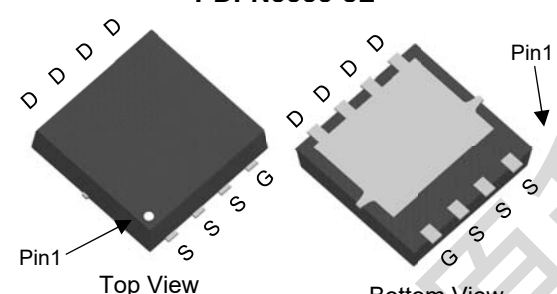
V_{DS}	I_D	$R_{DS(on)}$ (m Ω) Typ.
30V	64A	4.5@ $V_{GS} = 10V$, $I_D=20A$
		6.0@ $V_{GS} = 4.5V$, $I_D=10A$

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

PDFN3333-8L  Top View Bottom View		TOP Marking  ET6304T 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	64	A
	Drain Current (Continuous)@T _A =75°C	45	A
I_{DM}	Drain Current (Pulsed) ^a	180	A
P_D	Total Power Dissipation @T _c =25°C	33	W
	Total Power Dissipation @T _c =75°C	16	W
EAS	Avalanche energy, single pulsed	49	mJ
I_S	Maximum Diode Forward Current	14	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	45	°C/W

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

b: 1-in² 2oz Cu PCB board

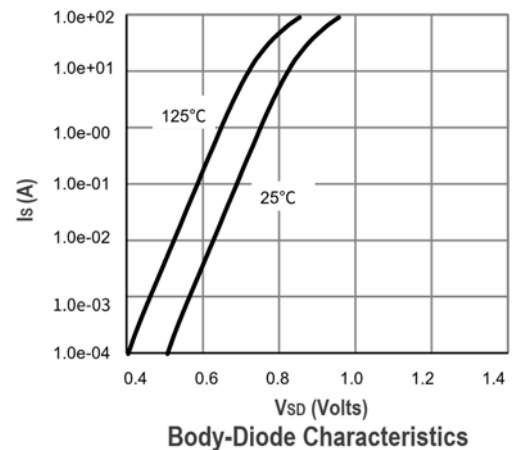
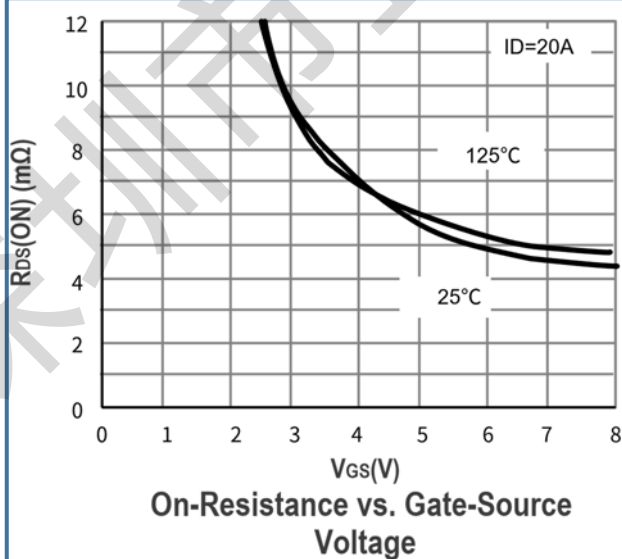
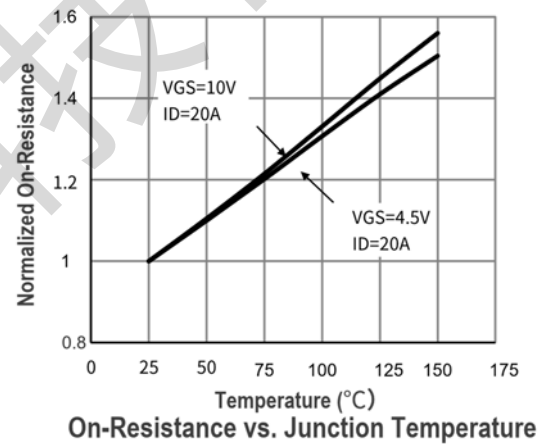
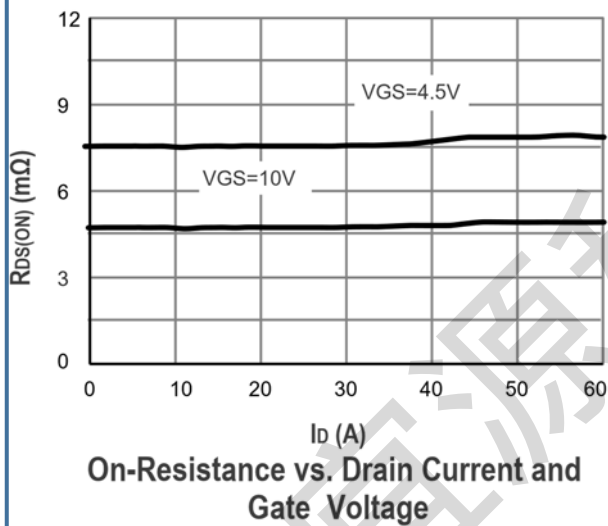
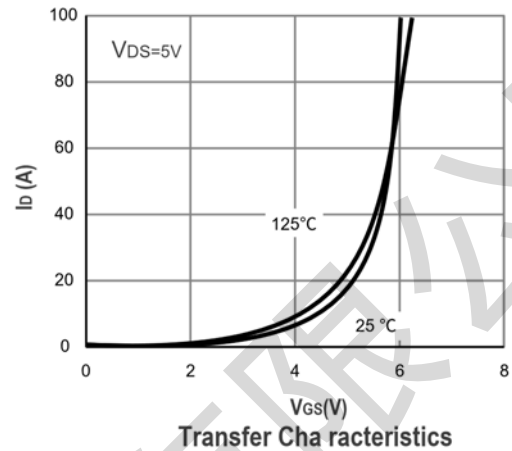
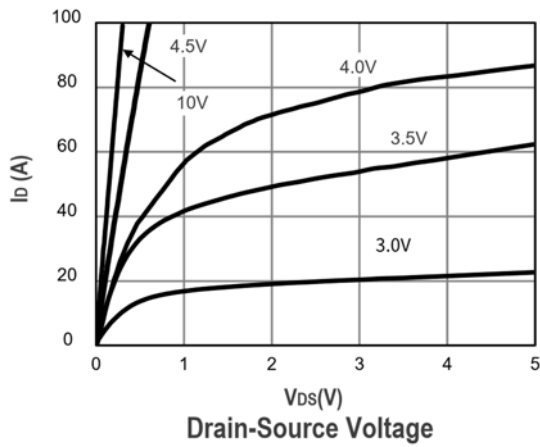


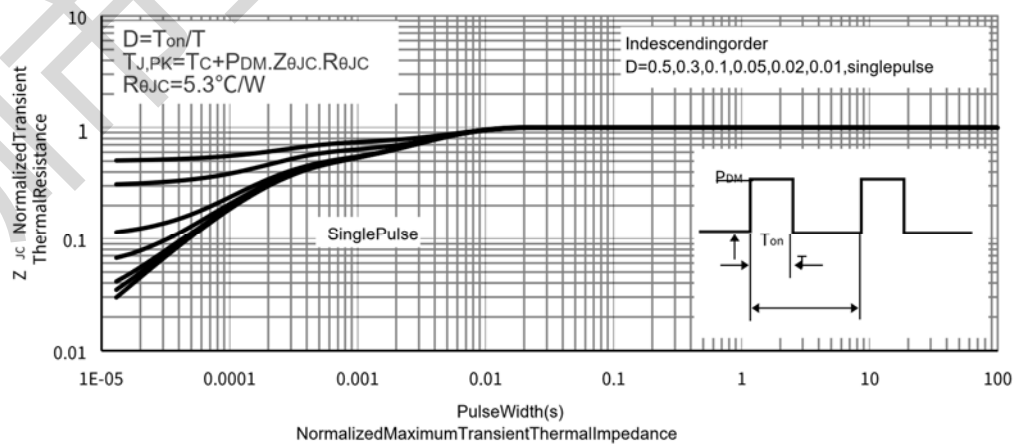
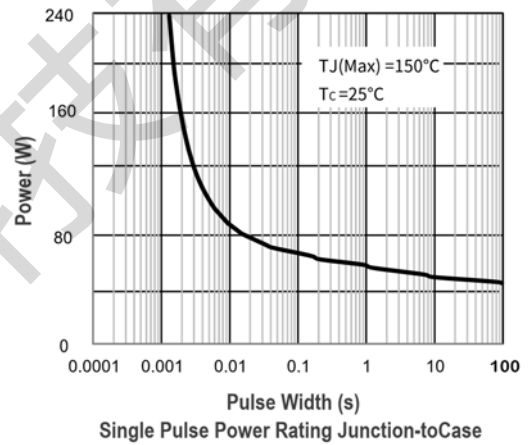
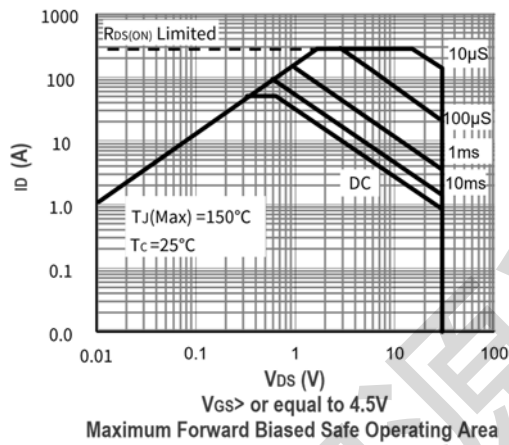
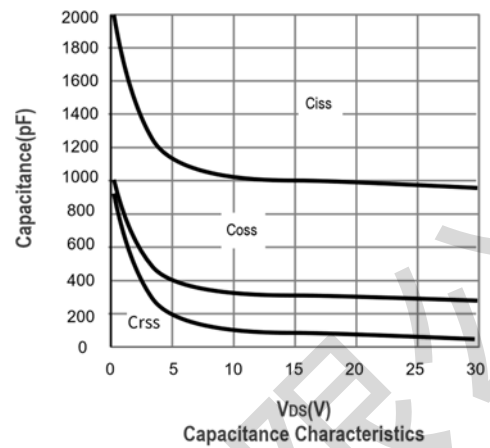
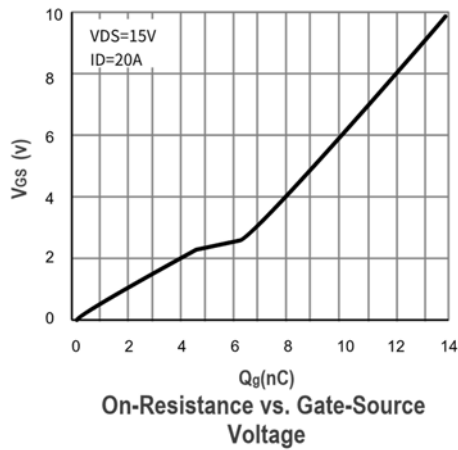
Electrical Characteristics (TA=25°C, unless otherwise noted)

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	1.4	1.8	2.2	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =20A	-	4.5	6.5	mΩ
		V _{GS} =4.5V, I _D =10A	-	6.0	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	-	995	-	PF
C _{oss}	Output Capacitance		-	265	-	
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

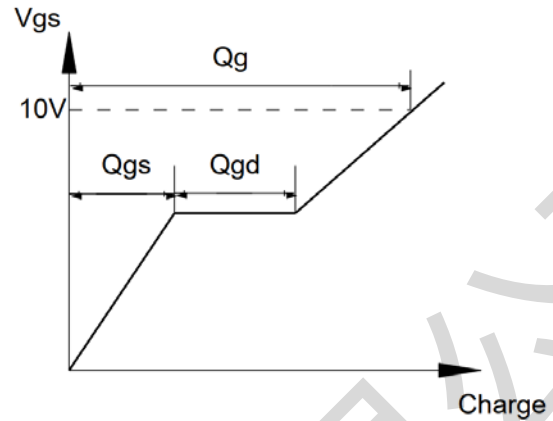
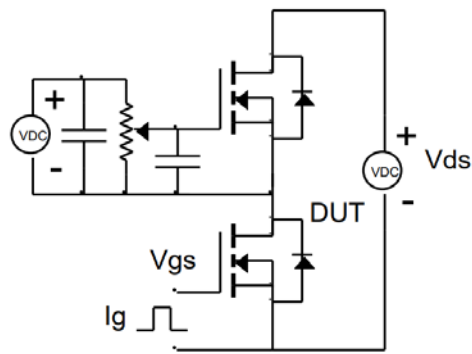
Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

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

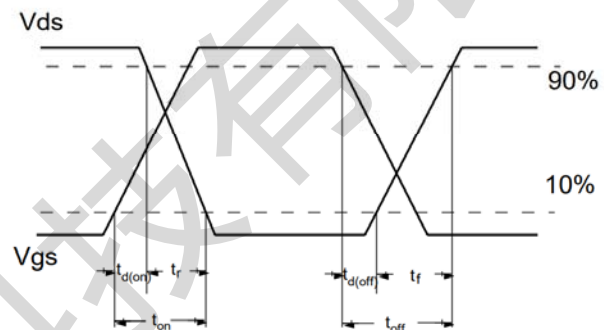
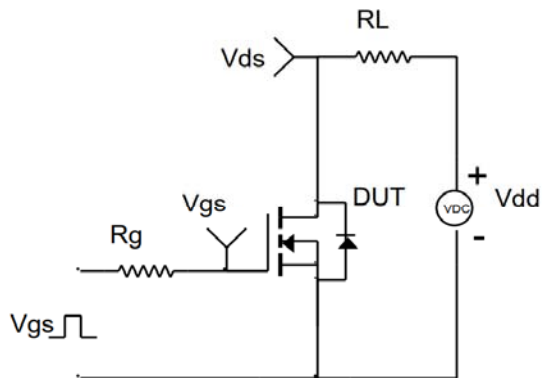




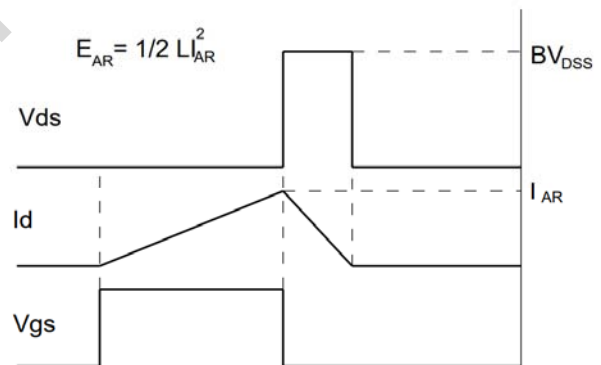
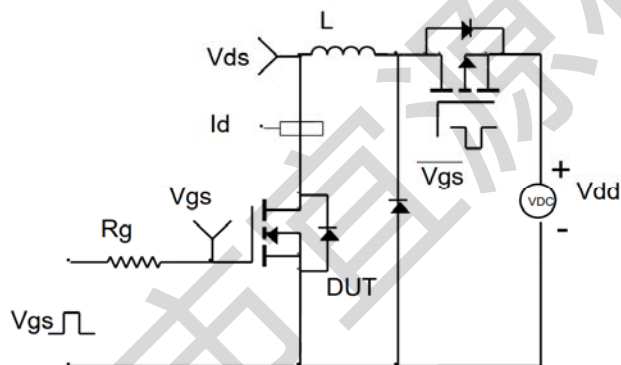
Gate Charge Test Circuit & Waveforms



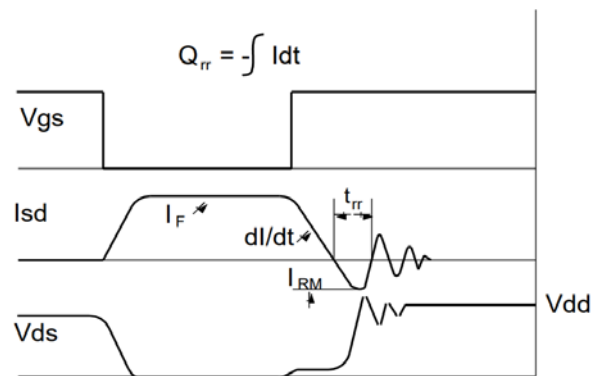
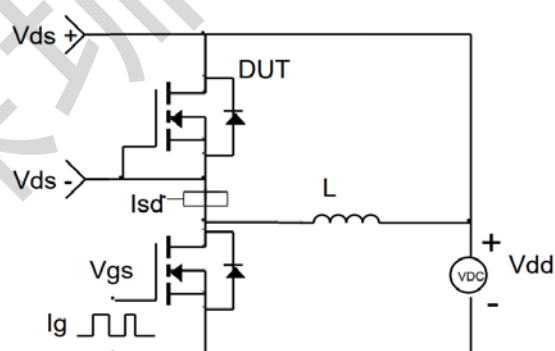
Resistive Switching Test Circuit & Waveforms

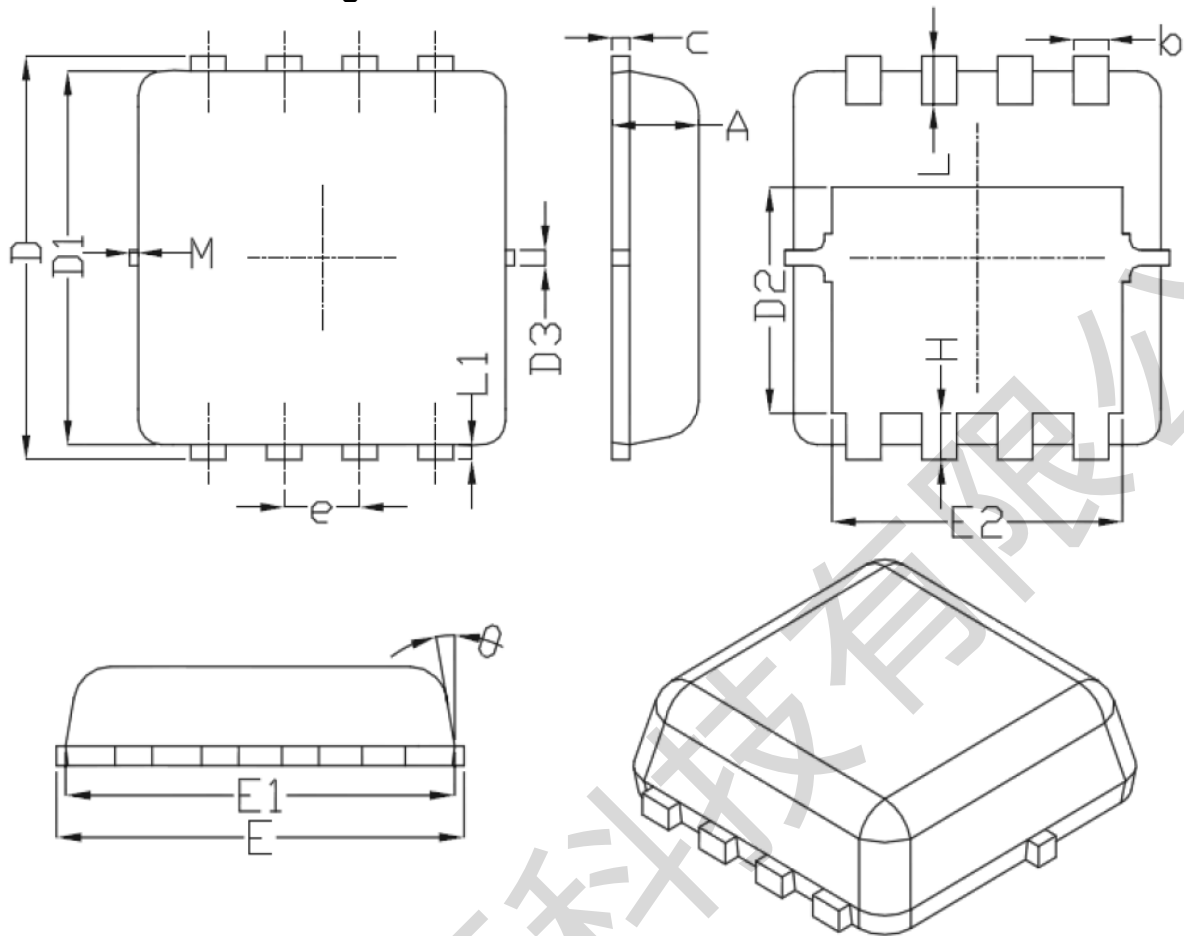


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms





Symbol	Dimensions (unit : mm)		
	Min	TYP	Max
A	0.700	0.750	0.800
b	0.250	0.300	0.350
c	0.100	0.150	0.250
D	3.250	3.350	3.450
D1	3.000	3.100	3.200
D2	1.780	1.880	1.980
D3	-	0.130	-
E	3.200	3.300	3.400
E1	3.000	3.150	3.200
E2	2.390	2.490	2.590
e	0.65BSC		
H	0.300	0.390	0.500
L	0.300	0.400	0.500
L1	-	0.130	-
θ	-	10°	12°
M	-	-	0.150