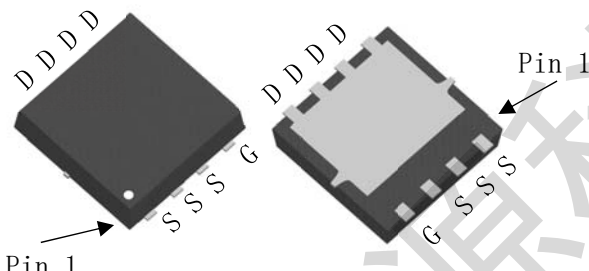
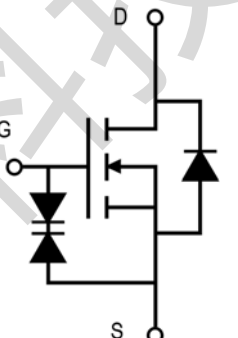


N-Channel Enhancement-Mode MOSFET (20V,53A)

PRODUCT SUMMARY

V_{DS}	I_D	$R_{DS(on)}$ (m Ω) Typ.
20V	53A	2.7@ $V_{GS} = 4.5V$, $I_D=20A$
		2.9@ $V_{GS} = 4.0V$, $I_D=20A$
		3.3@ $V_{GS} = 2.5V$, $I_D=8A$

Features - Super high density cell design for extremely low $R_{DS(ON)}$ - Exceptional on-resistance and maximum DC current capability - ESD Rating:2000V HBM - Lead (Pb) -free and halogen-free	Applications - lithium battery protection board. - Portable Equipment and Battery Powered Systems.
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 PDFN3333		TOP Marking
		 ET6206 XXXXXX
		D/C:XXXXXX

Absolute Maximum Ratings (TA=25°C, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±12	V
I_D	Drain Current (Continuous)@TA=25°C	53	A
	Drain Current (Continuous)@TA=75°C	41	A
I_{DM}	Drain Current (Pulsed) ^a	200	A
P_D	Total Power Dissipation @Tc=25°C	30	W
	Total Power Dissipation @Tc=75°C	4.5	W
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	°C
R_{QJA}	Thermal Resistance Junction to Ambient (PCB mounted) ^b	33	°C/W

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

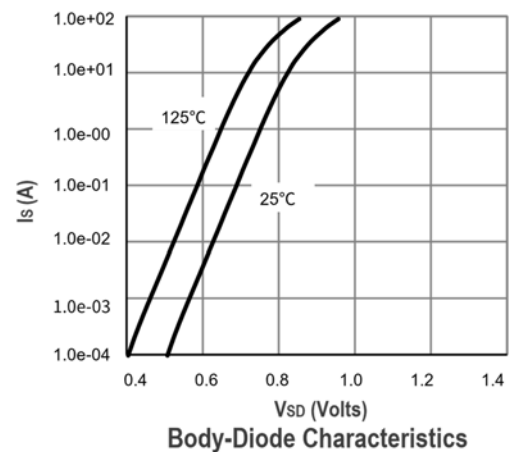
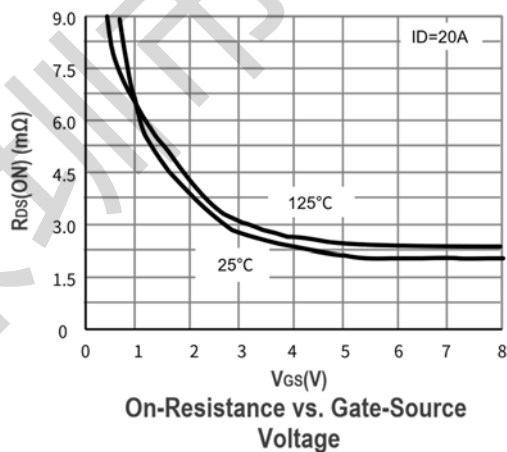
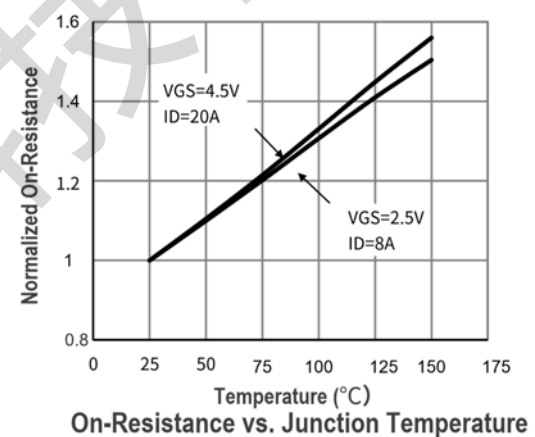
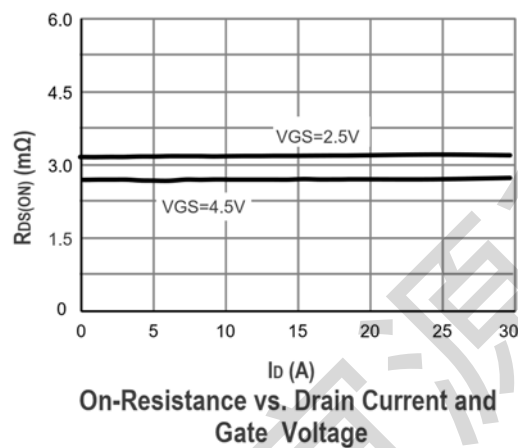
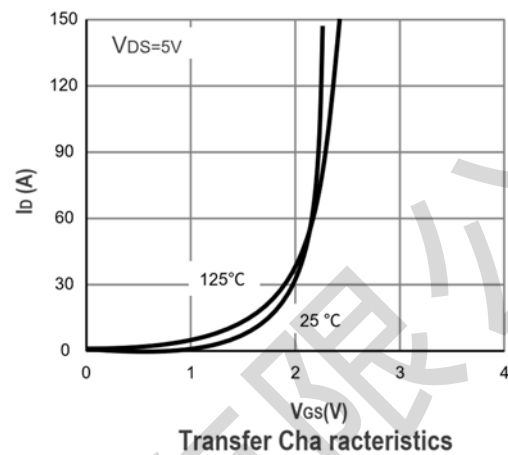
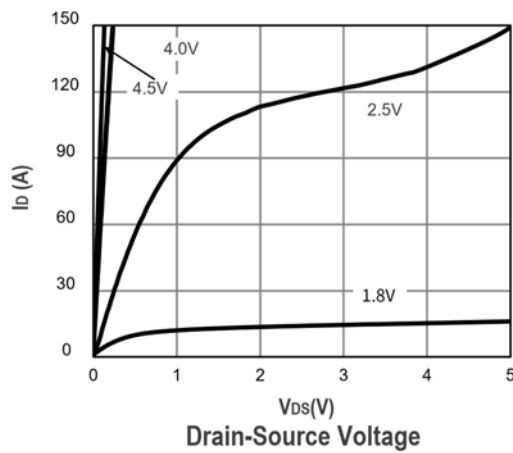
B: 1-in² 2oz Cu PCB board

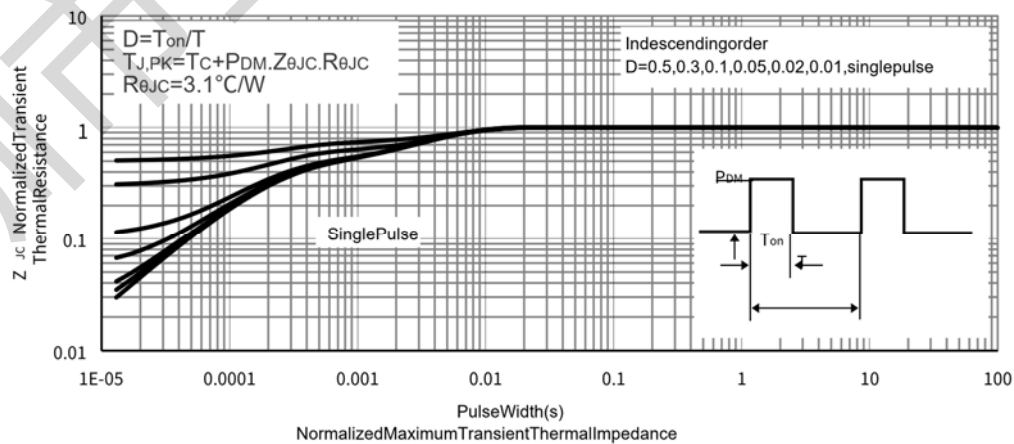
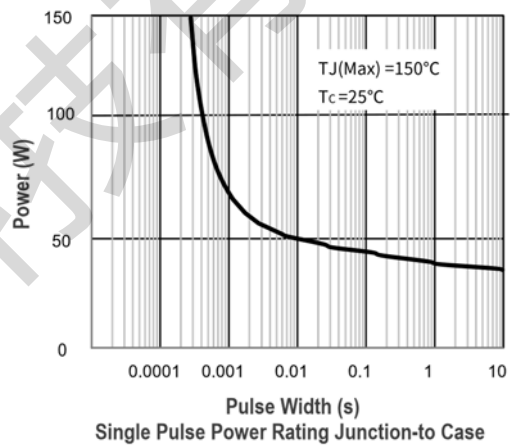
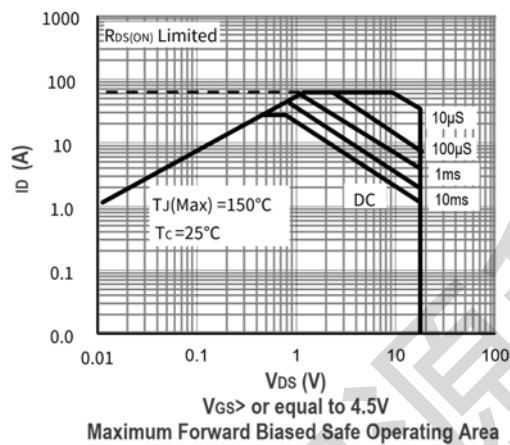
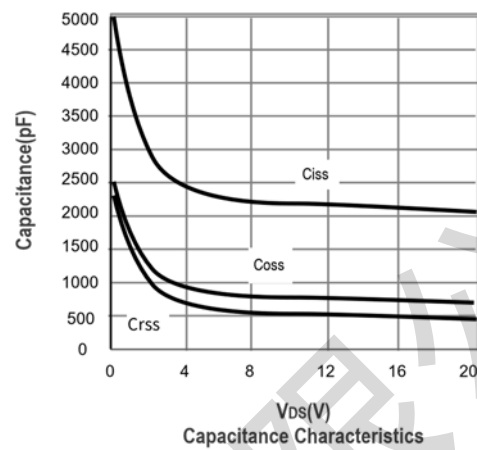
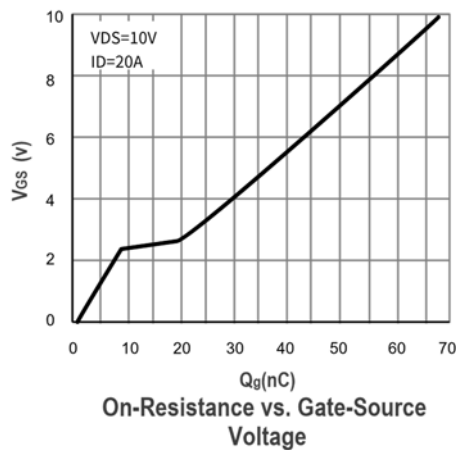
Electrical Characteristics (TA=25°C, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	20	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =20V, V _{GS} =0V	-	-	1	μA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V, V _{DS} =0V	-	-	±10	μA
• On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.5	0.7	0.9	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =20A	1.6	2.7	3.3	mΩ
		V _{GS} =4.0V, I _D =20A	1.6	2.9	3.8	
		V _{GS} =2.5V, I _D =8A	2.0	3.3	4.8	
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =10A		28		S
• Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =10V, V _{GS} =0V, f=1MHz	-	3220	4200	PF
C _{oss}	Output Capacitance		-	578	-	
C _{rss}	Reverse Transfer Capacitance		-	512	-	
• Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =10V, I _D =3A, V _{GS} =10V	-	68	-	nC
Q _{gs}	Gate-Source Charge		-	7.4	-	
Q _{gd}	Gate-Drain Charge		-	11.8	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =10V, R _L =10Ω, I _D =3A, V _{GEN} =10V, R _G =6Ω	-	12	-	nS
t _r	Turn-on Rise Time		-	10	-	
t _{d(off)}	Turn-off Delay Time		-	78	-	
t _f	Turn-off Fall Time		-	45	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =10A	-	0.75	1.2	V
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	2.1	-	Ω

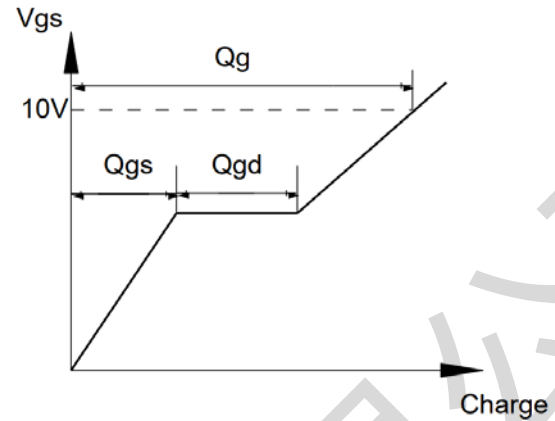
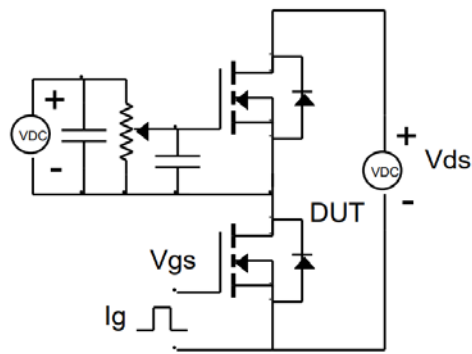
Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

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

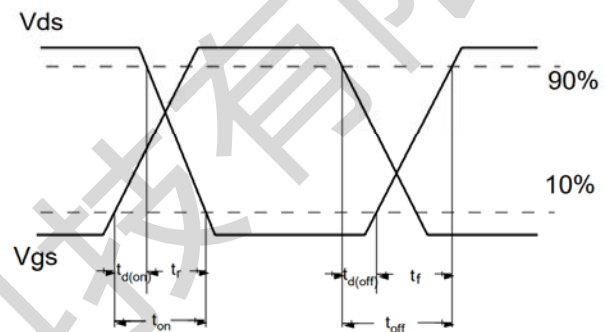
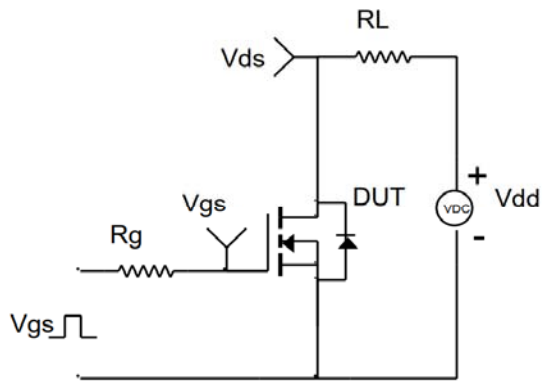




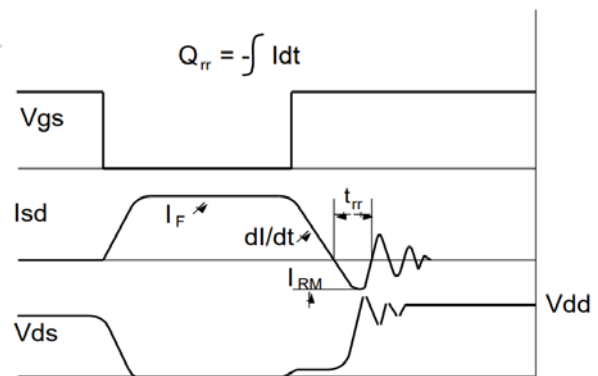
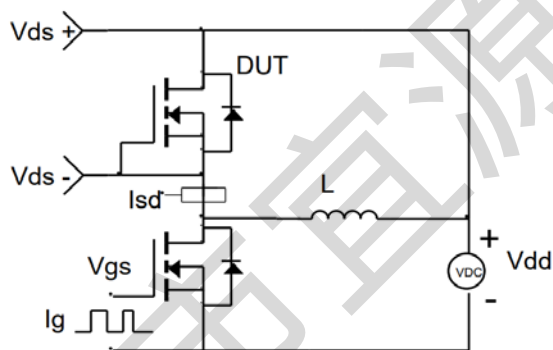
Gate Charge Test Circuit & Waveforms



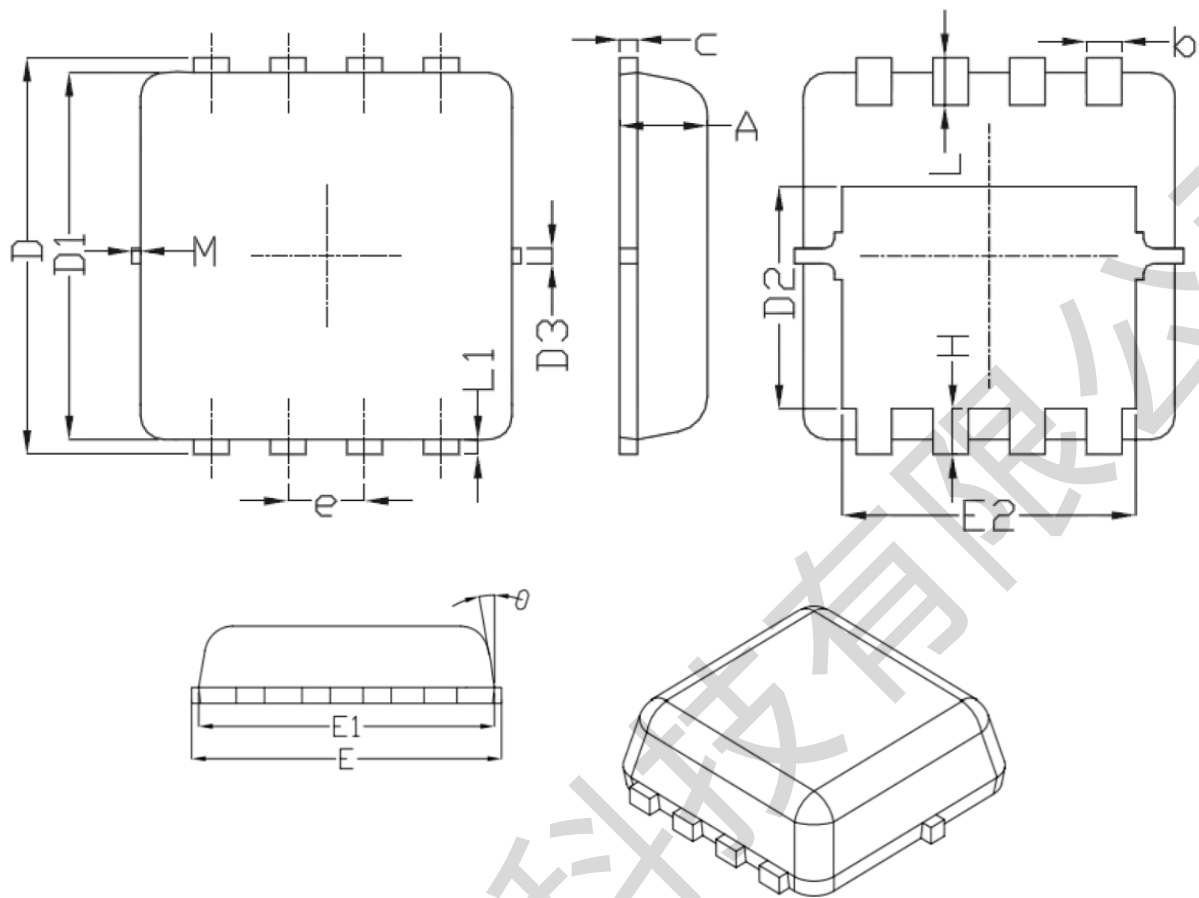
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



PDFN3333-8L EP1 Package Outline Data



Symbol	Dimensions (unit : mm)		
	Min	TYP	Max
A	0.70	0.75	0.8
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.2
D2	1.78	1.88	1.98
D3	-	0.13	-
E	3.20	3.30	3.4
E1	3.00	3.15	3.2
E2	2.39	2.49	2.59
e	0.65BSC		
H	0.30	0.39	0.5
L	0.30	0.40	0.5
L1	-	0.13	-
K	0.30	-	-
θ	-	10°	12°
M	*	*	0.15