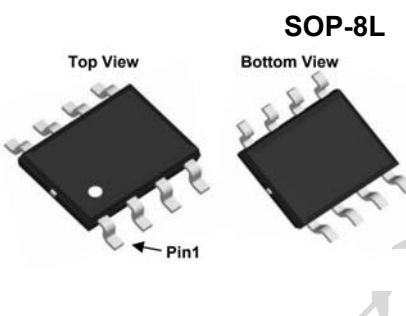
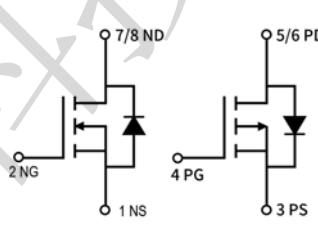


Complementary High Density Trench MOSFET (30V,10A)

PRODUCT SUMMARY

PRODUCT SUMMARY (N-Channel)			PRODUCT SUMMARY (P-Channel)		
V _{DSS}	I _D	R _{DS(on)} (mΩ) Typ.	V _{DSS}	I _D	R _{DS(on)} (mΩ) Typ.
30V	10A	10@ VGS = 10V, ID=10A	-30V	-10A	14@ VGS = -10V, ID=-10A
		14@ VGS = 4.5V, ID=10A			22@ VGS = -4.5V, ID=-5A

Features - Super high density cell design for extremely low R_{DS(ON)} - Exceptional on-resistance and maximum DC current capability - Excellent Qg x R_{DS(ON)} product (FOM) - Lead (Pb) -free and halogen-free	Applications Motor control and drive
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 SOP-8L Pin 1: N Source PIN 2: N Gate PIN 3: P Source PIN 4: P Gate PIN 5/6: P Drain PIN 7/8: N Drain		TOP Marking  ET3325 XXXXXX XXXXXX:D/C
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Absolute Maximum Ratings (T_A=25°C, unless otherwise noted)

Symbol	Parameter	Max N	Max P	Units
V _{DS}	Drain-Source Voltage	30	-30	V
V _{GS}	Gate-Source Voltage	±20	±20	V
I _D	Drain Current (Continuous)@T _A =25°C	10	-10	A
	Drain Current (Continuous)@T _A =75°C	6	-6	A
I _{DM}	Drain Current (Pulsed) ^a	45	-45	A
P _D	Total Power Dissipation @T _c =25°C	2	2	W
	Total Power Dissipation @T _c =75°C	1.5	1.5	W
I _S	Maximum Diode Forward Current	10	10	A
T _j , T _{stg}	Operating Junction and Storage Temperature Range	-55 to +150	-55 to +150	°C
R _{QJA}	Thermal Resistance Junction to Ambient (PCB mounted) ^b	50	55	°C/W

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

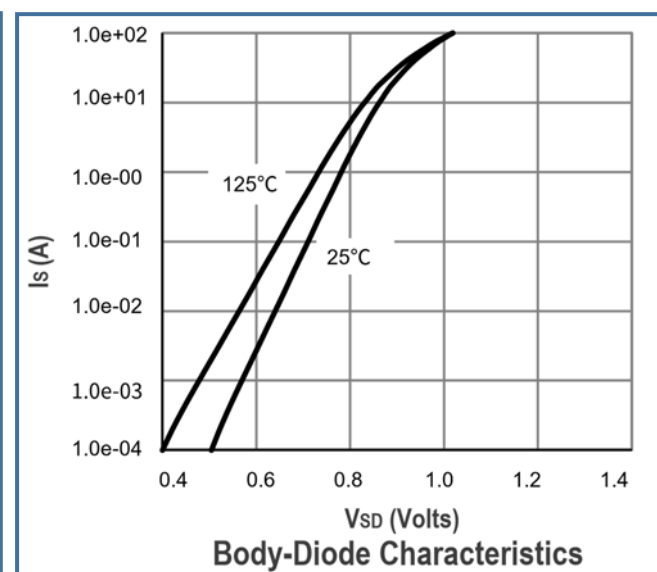
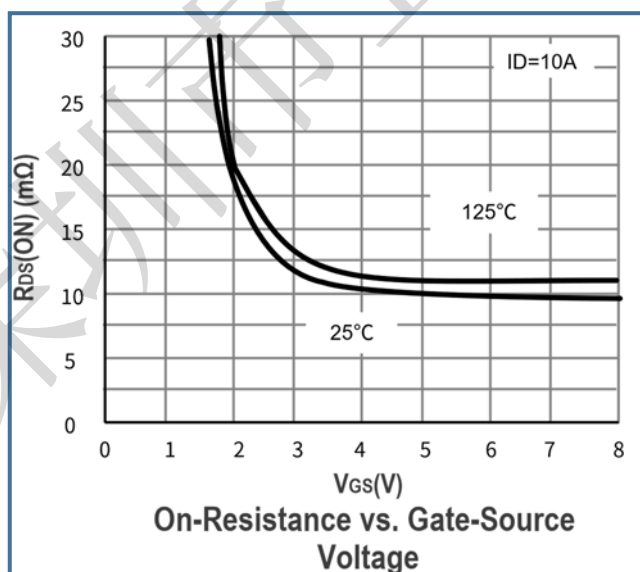
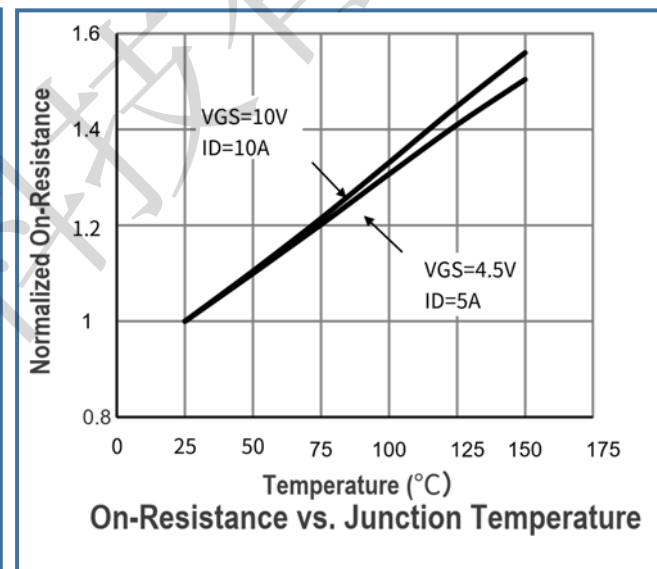
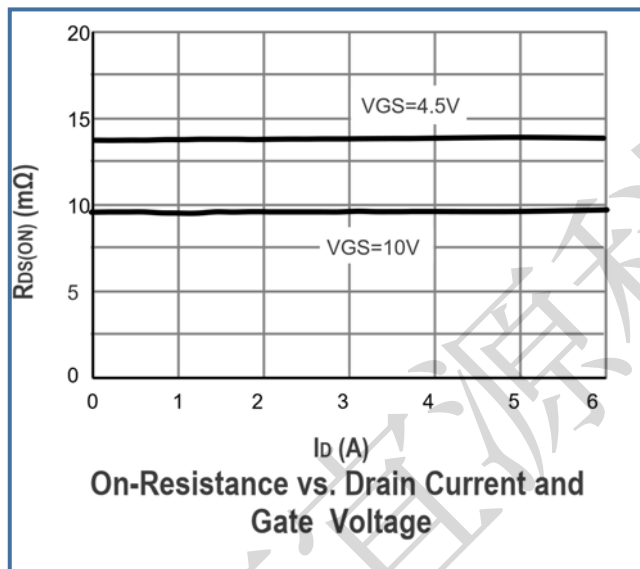
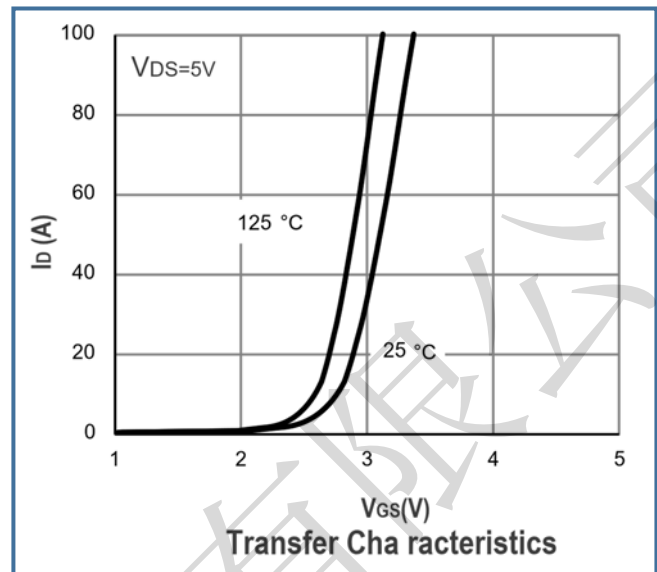
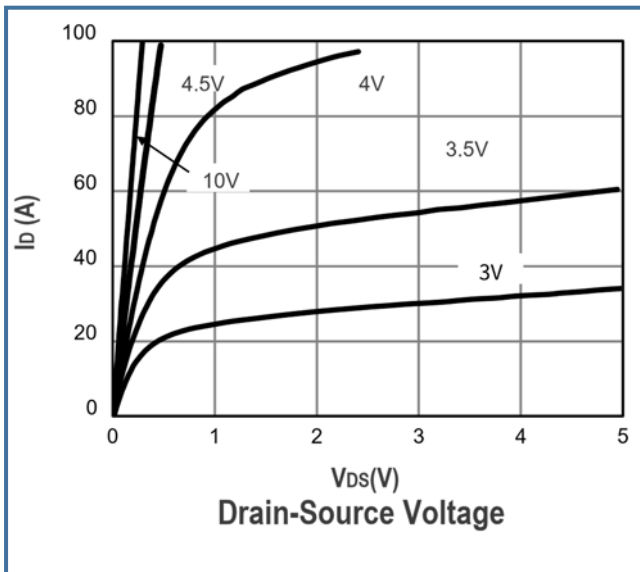
b: 1-in² 2oz Cu PCB board

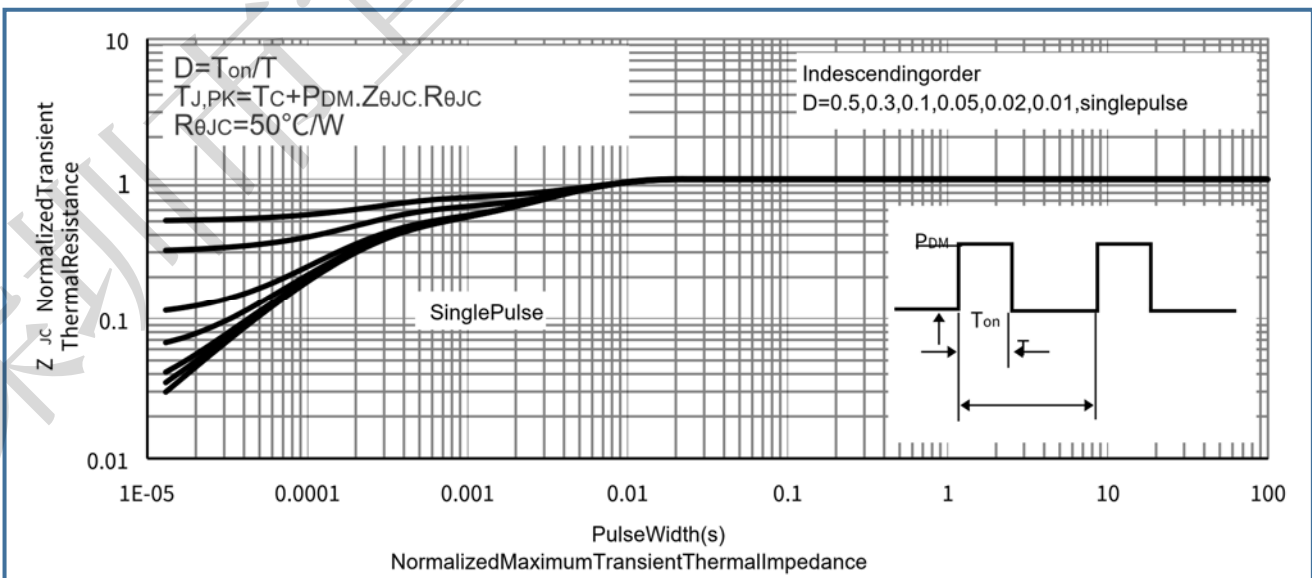
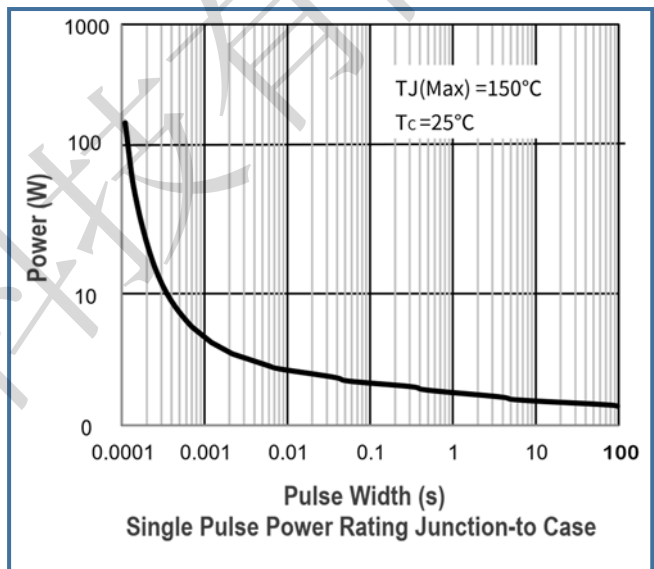
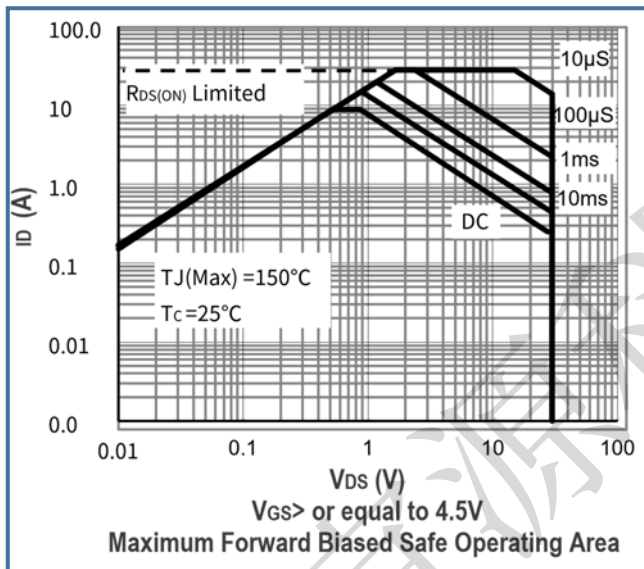
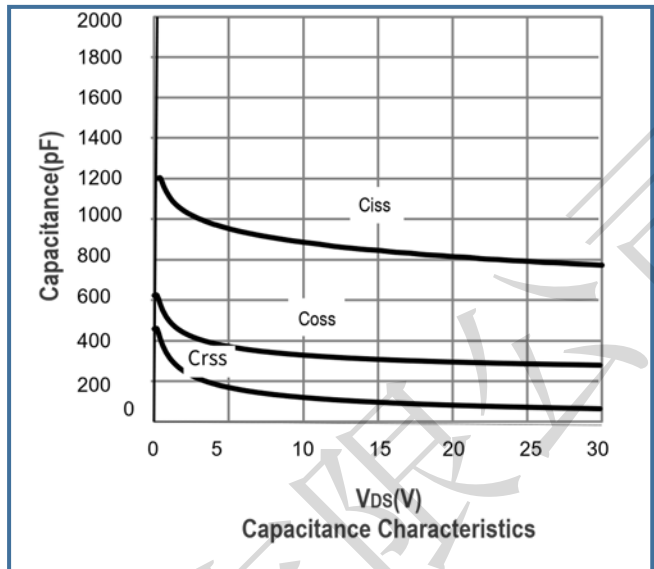
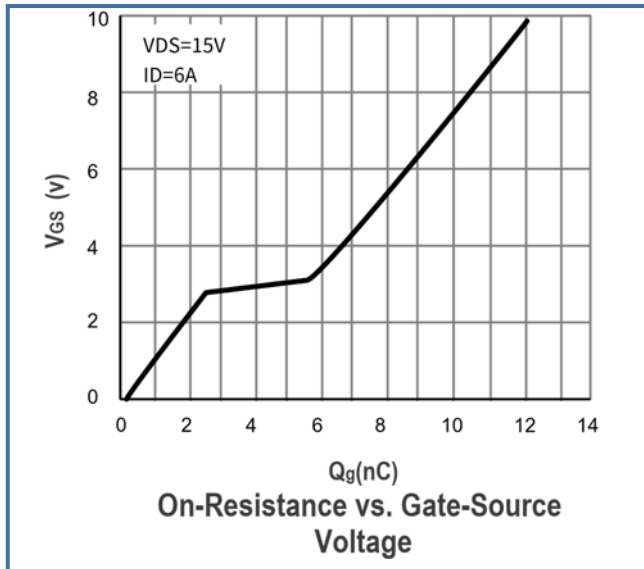
N-Channel Electrical Characteristics (TA=25°C, unless otherwise noted)

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	2.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, I _D =30A	-	10	15	mΩ
		V _{GS} =4.5V, I _D =20A	-	14	19	
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =30A		22		S
• Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	810	-	PF
C _{oss}	Output Capacitance		-	320	-	
C _{rss}	Reverse Transfer Capacitance		-	70	-	
• Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =15V, I _D =6A, V _{GS} =10V	-	13	-	nC
Q _{gs}	Gate-Source Charge		-	2.2	-	
Q _{gd}	Gate-Drain Charge		-	2.6	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =15V, R _L =15Ω, I _D =6A, V _{GEN} =10V, R _G =3Ω	-	5	-	nS
t _r	Turn-on Rise Time		-	3	-	
t _{d(off)}	Turn-off Delay Time		-	20	-	
t _f	Turn-off Fall Time		-	3	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =10A	-	-	1.2	V
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.2	-	Ω

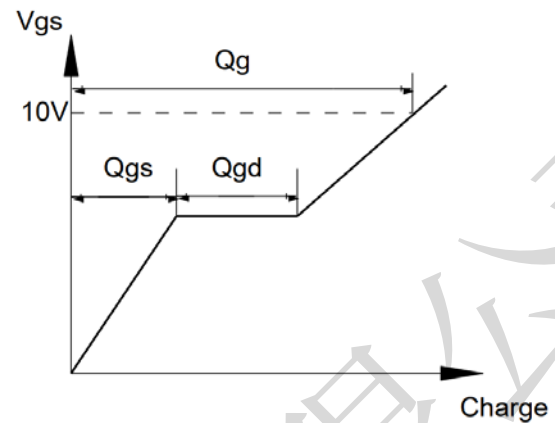
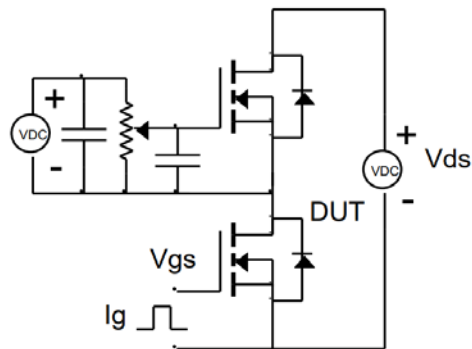
Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

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

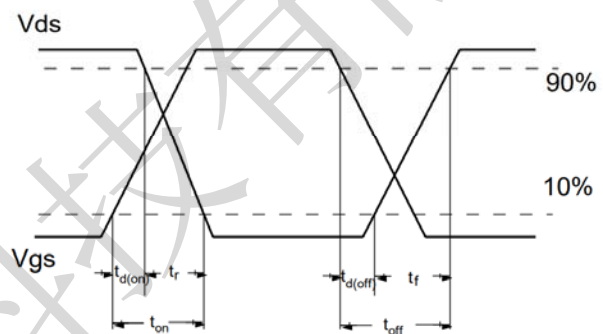
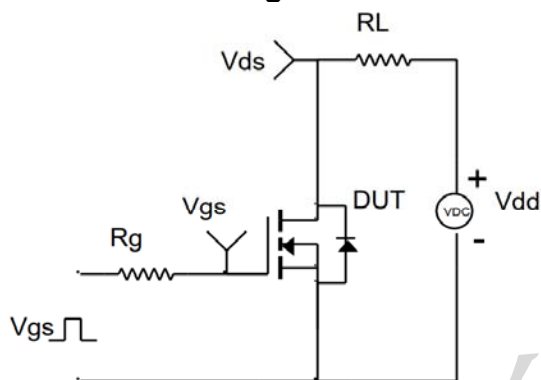




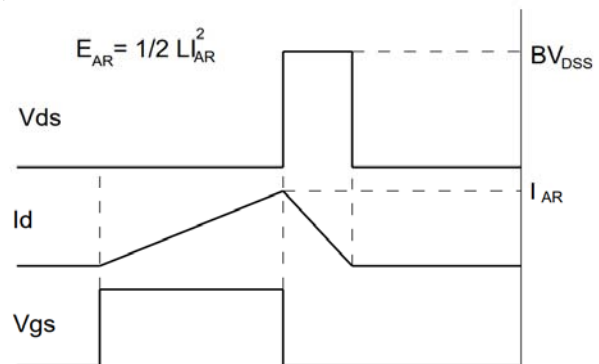
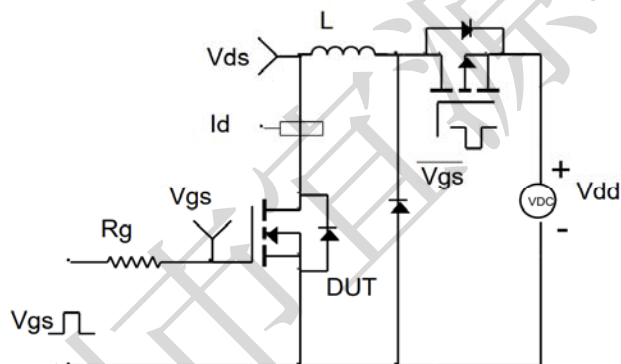
N Gate Charge Test Circuit & Waveforms



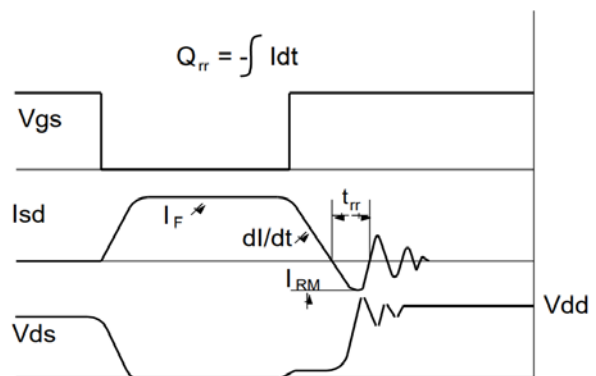
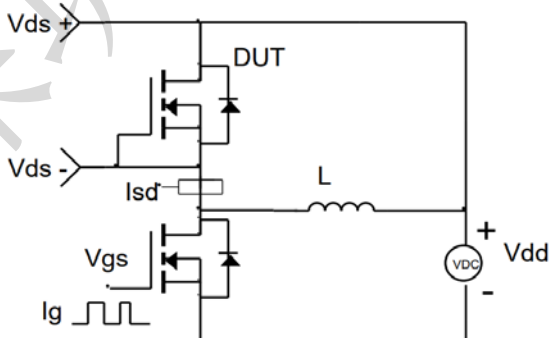
N Resistive Switching Test Circuit & Waveforms



N Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



N Diode Recovery Test Circuit & Waveforms

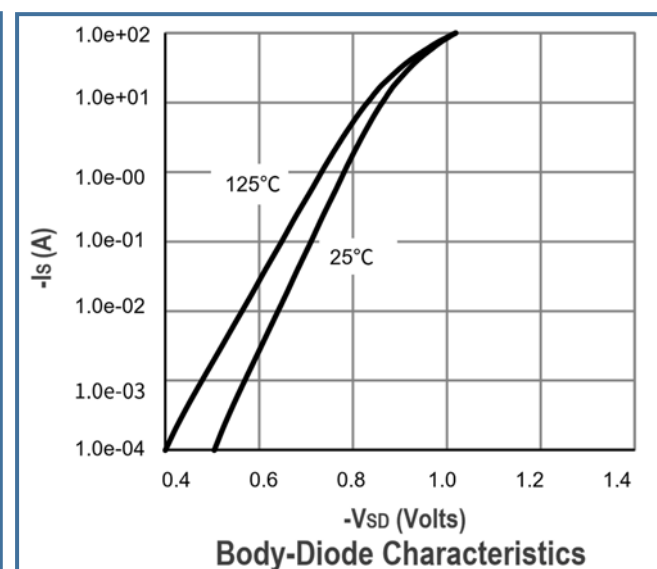
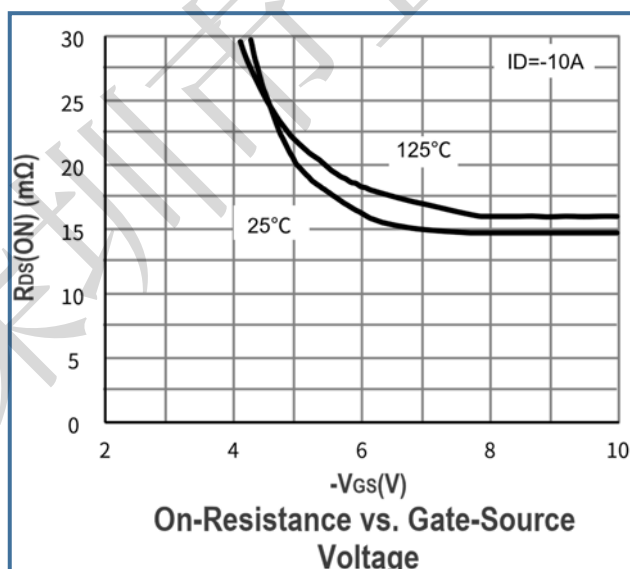
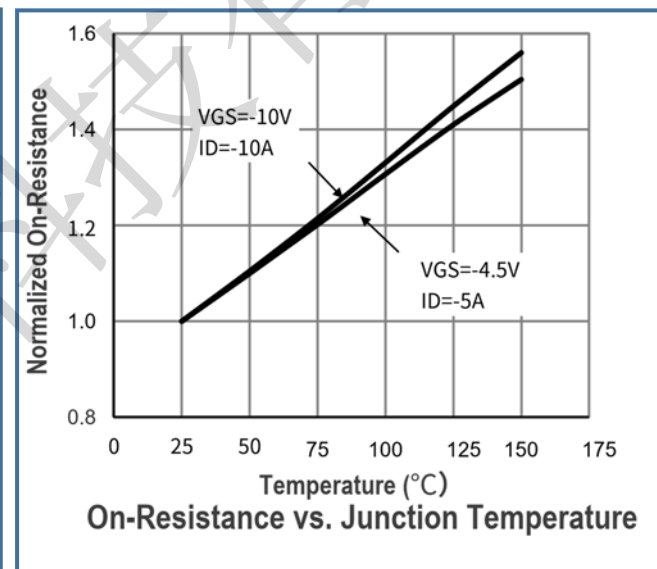
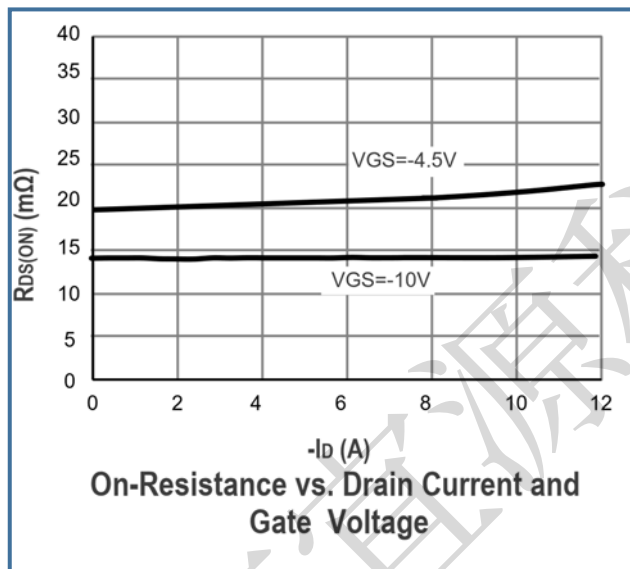
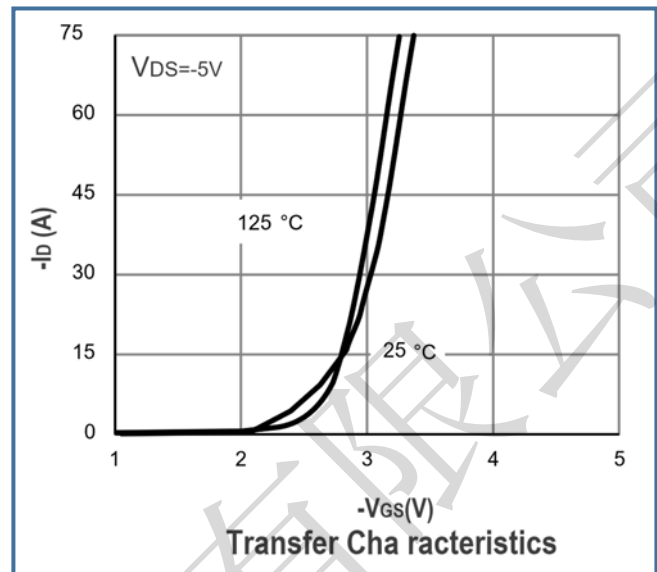
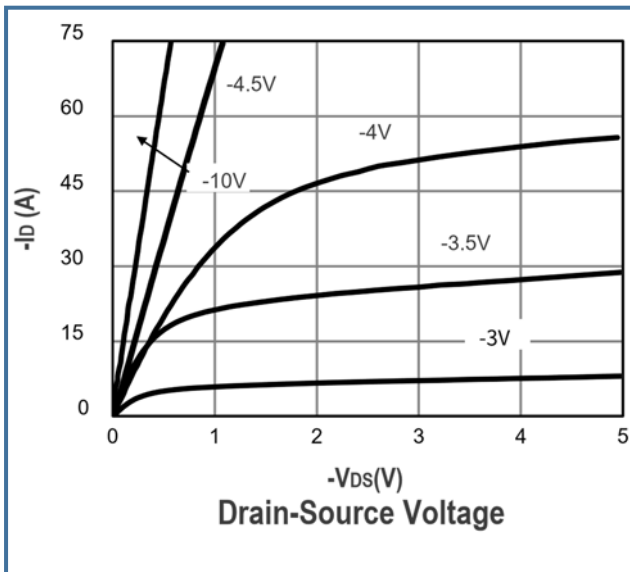


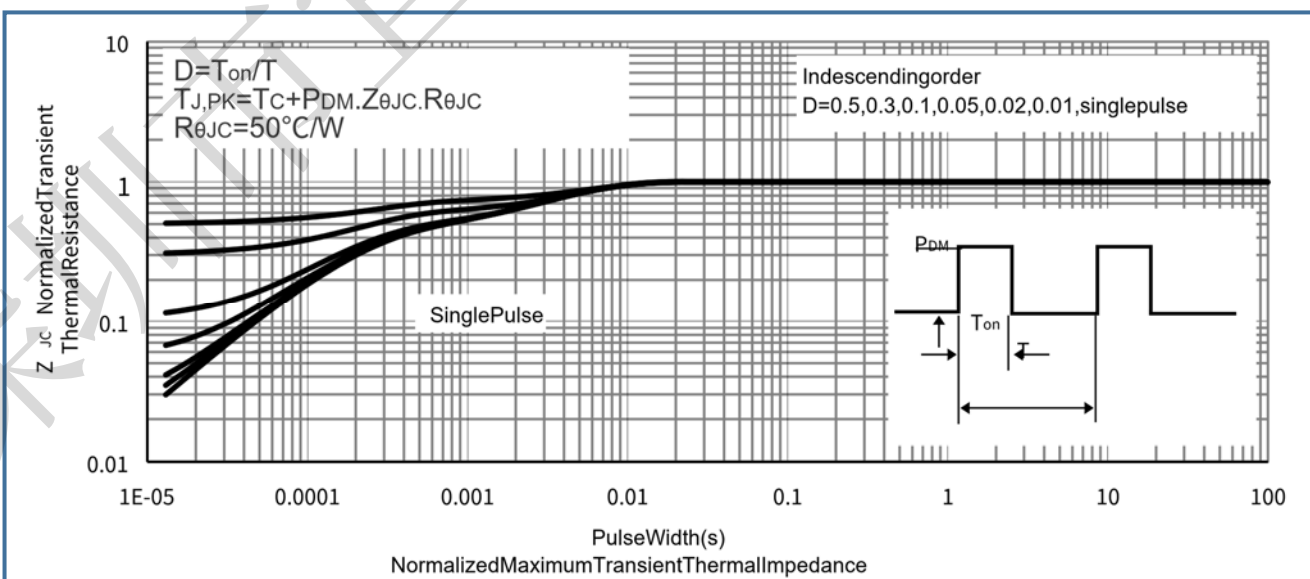
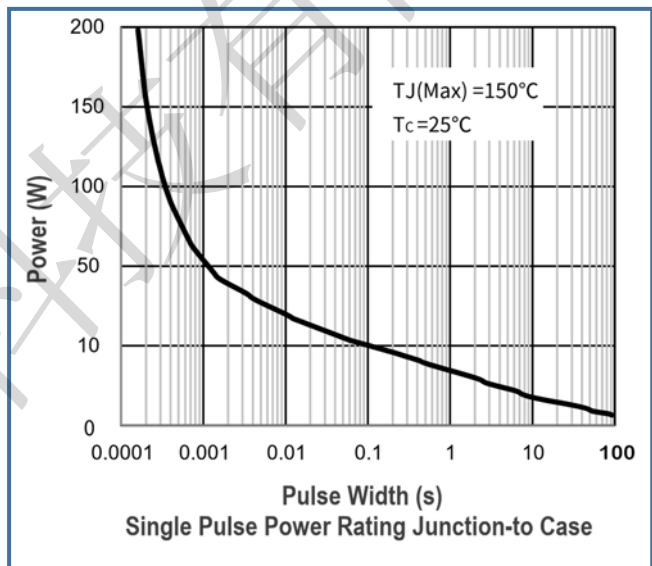
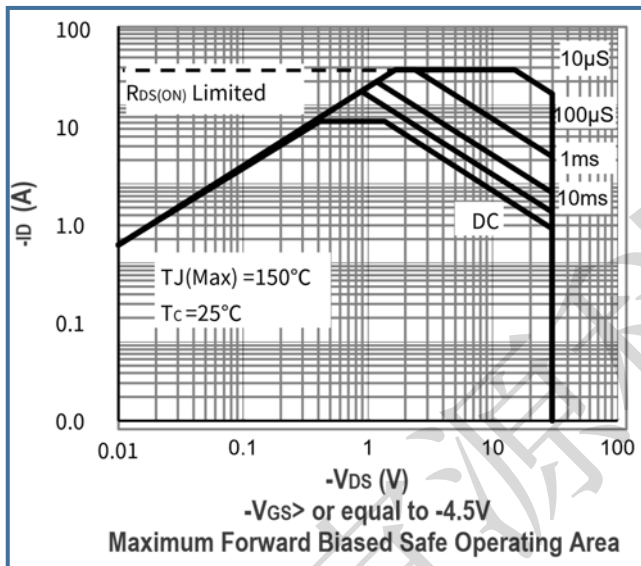
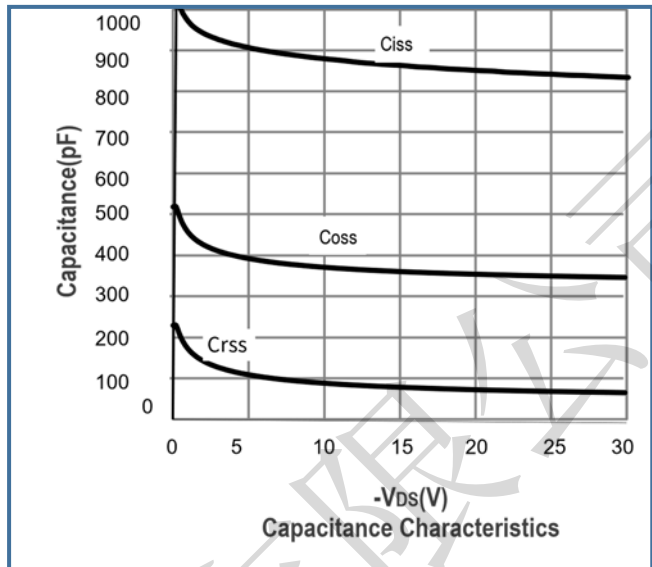
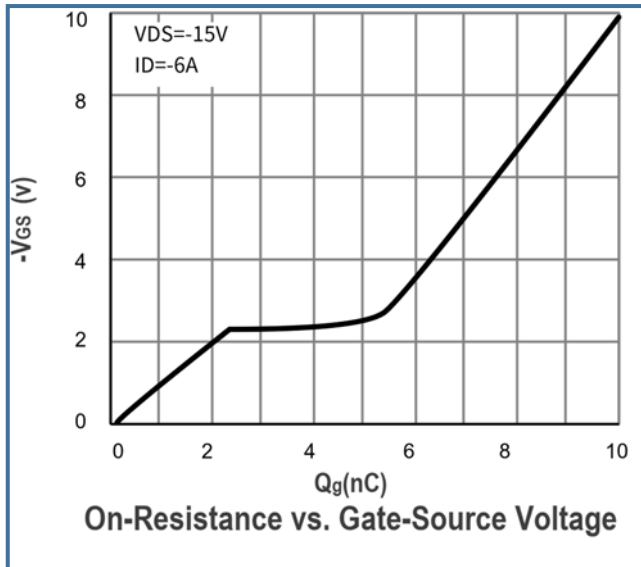
P-Channel Electrical Characteristics (TA=25°C, unless otherwise noted)

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	-2.0	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-10A	-	14	18	mΩ
		V _{GS} =-4.5V, I _D =-10A	-	22	28	
g _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-10A		21		S
• Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz	-	860	-	PF
C _{oss}	Output Capacitance		-	340	-	
C _{rss}	Reverse Transfer Capacitance		-	75	-	
• Switching Characteristics						
Q _g	Total Gate Charge	V _{DS} =-15V, I _D =-6A, V _{GS} =-10V	-	10	-	nC
Q _{gs}	Gate-Source Charge		-	3.3	-	
Q _{gd}	Gate-Drain Charge		-	2.6	-	
t _{d(on)}	Turn-on Delay Time	V _{DD} =-15V, R _L =15Ω, I _D =-6A, V _{GEN} =-10V, R _G =3Ω	-	7	-	nS
t _r	Turn-on Rise Time		-	7	-	
t _{d(off)}	Turn-off Delay Time		-	22	-	
t _f	Turn-off Fall Time		-	7	-	
• Drain-Source Diode Characteristics						
V _{SD}	Drain-Source Diode Forward Voltage	V _{GS} =0V, I _S =-10A	-	-	-1.2	V
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	1.2	-	Ω

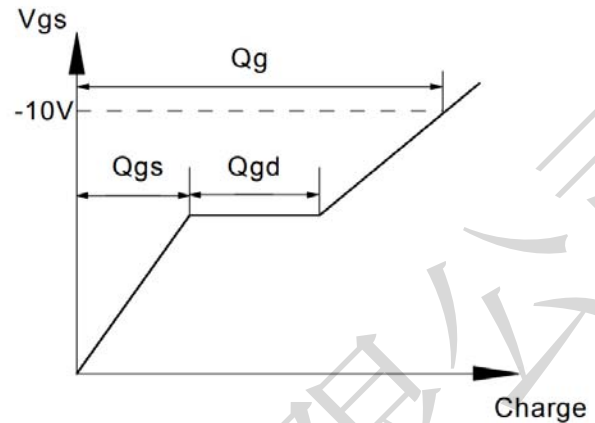
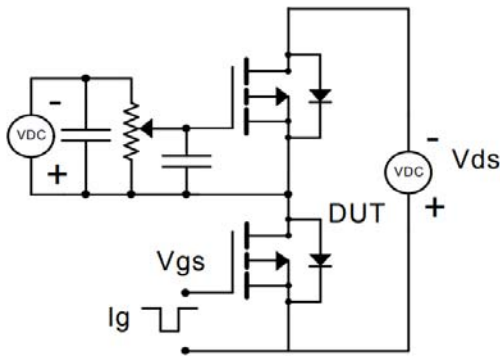
Note: Pulse Test: Pulse Width≤300us, Duty Cycle≤2%

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

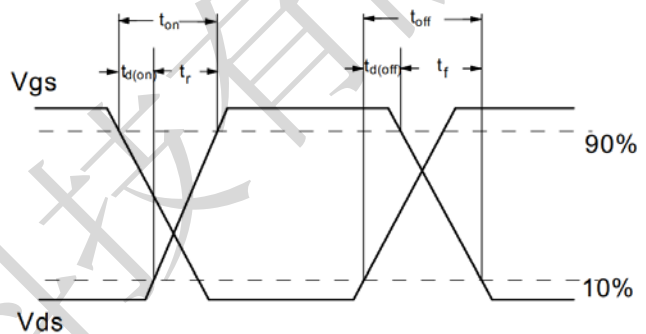
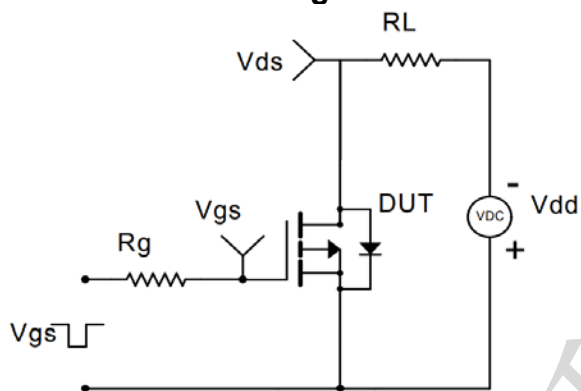




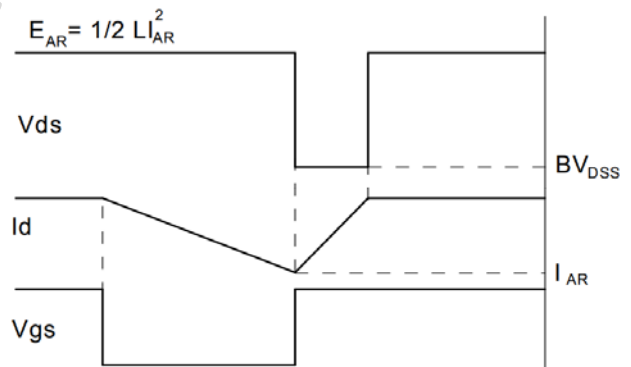
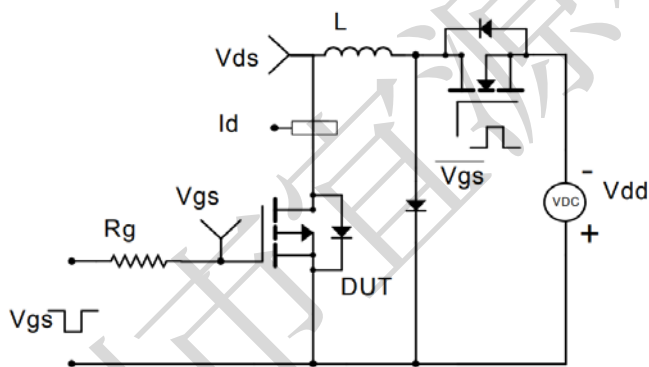
P Gate Charge Test Circuit & Waveforms



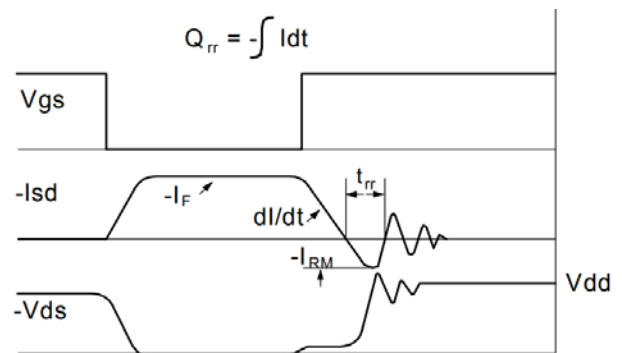
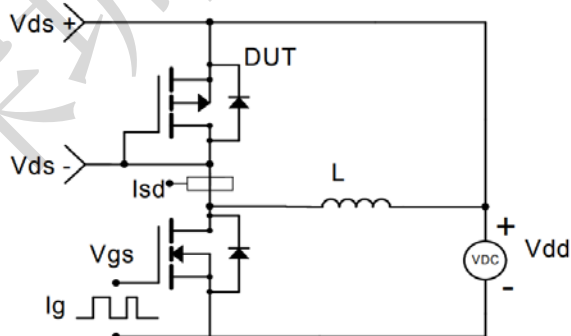
P Resistive Switching Test Circuit & Waveforms



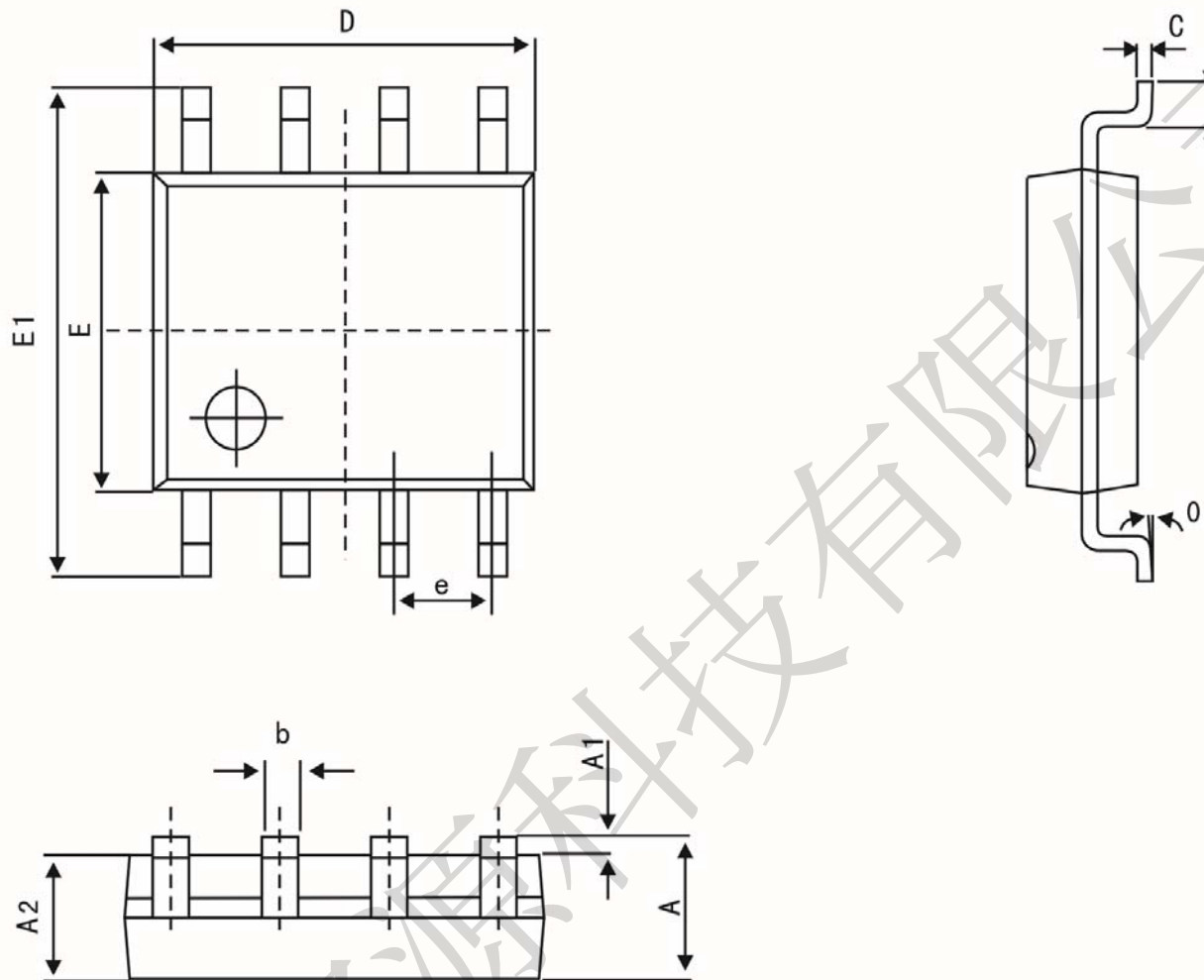
P Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



P Diode Recovery Test Circuit & Waveforms



SOP-8L Package Outline Data



Symbol	Dimensions In Millimeters (MM)		Dimensions In Inches (MIL)	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270 (BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°