

30V Complementary MOSFET

Feature

N- Channel

Vds = 30V

30 A (Vgs= 10V)

8.8 mΩ (Vgs= 10V)

13.4 mΩ (Vgs= 4.5V)

- 100% Avalanche Tested
- Reliable and Rugged
- Halogen Free and Green Devices Available (RoHS Compliant)

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P - Channel

Vds = -30V

- 19 A (Vgs= -10V)

22 mΩ (Vgs= -10V)

40 mΩ (Vgs= -4.5V)

Pin Description

Applications

- Synchronous Rectifiers
- Wireless Power
- H-bridge Motor Drive

Ordering and Marking Information

C2
G110C03
XYMXXXXXX

Package Code
C2: PDFN5*6-8L

Date Code
XYMXXXXXX

Absolute Maximum Ratings

Symbol	Parameter	N- Channel	P- Channel	Unit	
Common Ratings (Tc=25°C Unless Otherwise Noted)					
V _{DSS}	Drain-Source Voltage	30	-30	V	
V _{GSS}	Gate-Source Voltage	±20		V	
T _J	Junction Temperature Range	-55 to 175		°C	
T _{STG}	Storage Temperature Range	-55 to 175		°C	
I _S	Source Current-Continuous(Body Tc=25°C)	30	-19	A	
Mounted on Large Heat Sink					
I _{DM}	Pulsed Drain Current *	Tc=25°C	90	-60	A
I _D	Continuous Drain Current	Tc=25°C	30	-19	A
		Tc=100°C	14	-13.5	A
P _D	Maximum Power Dissipation	Tc=25°C	25	25	W
		Tc=100°C	12.5	12.5	W
R _{θJC}	Thermal Resistance, Junction-to-Ambient	6	6	°C/W	
R _{θJA}	Thermal Resistance, Junction-to-Ambient	50	50	°C/W	

N-Mosfet Electrical Characteristics (Tc =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HYG110C03LR1			Unit
			Min	Typ.	Max	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =250 A	30	-		V
I _{DSS}	Drain-to-Source Leakage Current	V _{DS} =30V, V _{GS} =0V	-	-	1	A
		T _J =125°C	-	-	50	A
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =250 A	1	1.9	3	V
I _{GSS}	Gate-Source Leakage Current	V _{GS} =± 20V, V _{DS} =0V	-	-	±100	nA
R _{DS(on)}			-	8.8	11	m
				13.4	18	
Diode						
V _{SD}					1.0	V
t _{rr}	Recovery Time	I _{SD} =10A, dI _{SD} /dt=100A/μs				ns
Q _{rr}	Recovery Charge					nC

N-Mosfet Electrical Characteristics (Cont.) (Tc =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HYG110C03LR1			Unit
			Min	Typ.	Max	
Dynamic						
R _{θ(jc)}	Thermal Resistance					°C/W

N-Mosfet Typical Operating Characteristics

Figure 1: Power Dissipation

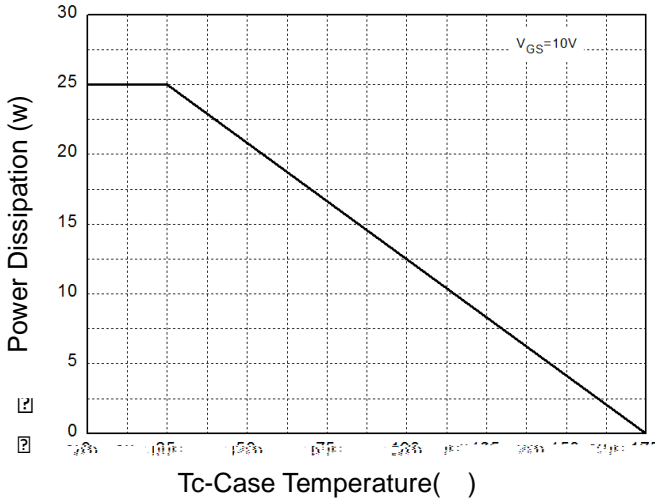


Figure 2: Drain Current

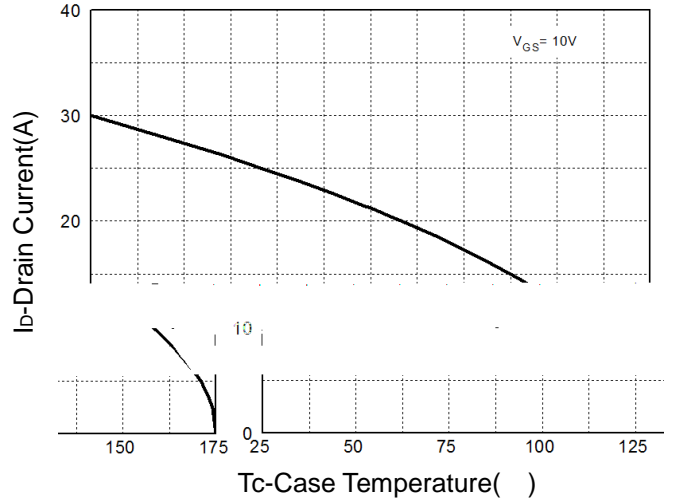


Figure 3: Safe Operation Area

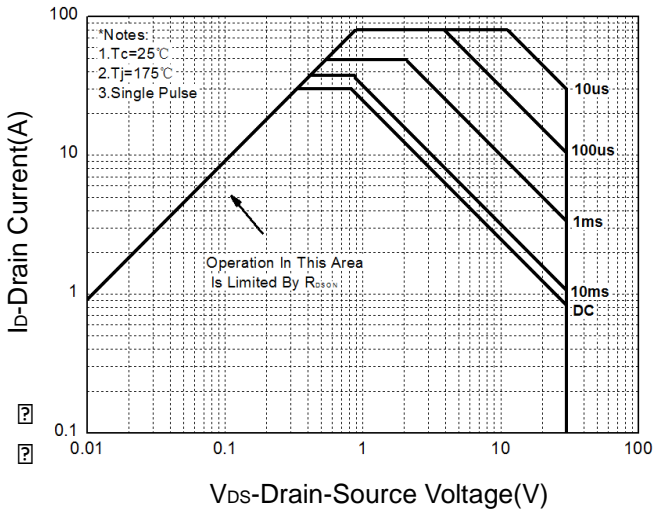


Figure 4: Thermal Transient Impedance

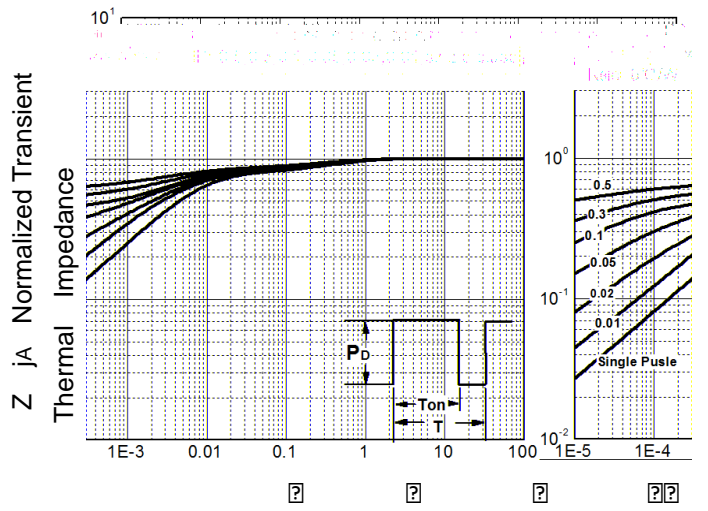


Figure 5: Output Characteristics

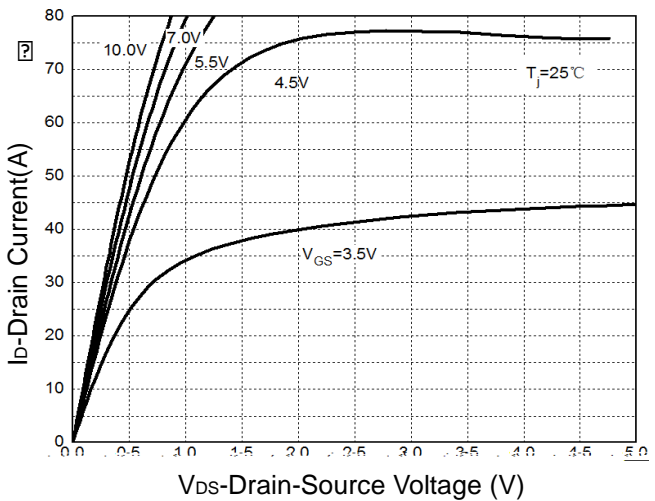
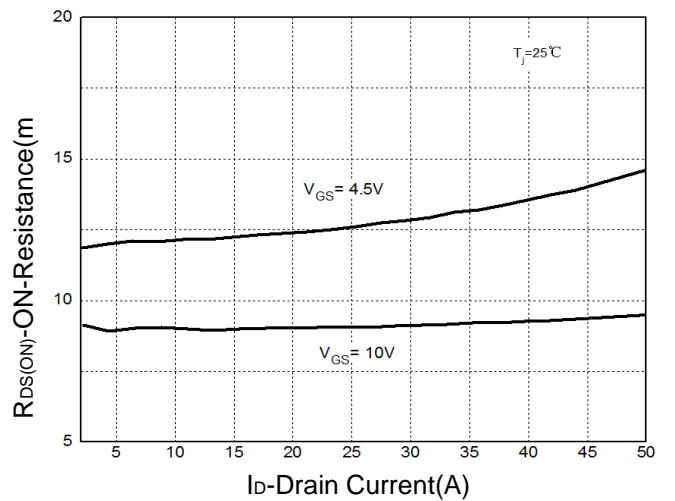


Figure 6: Drain-Source On Resistance



N-Mosfet Typical Operating Characteristics

Figure 7: On-Resistance vs. Temperature

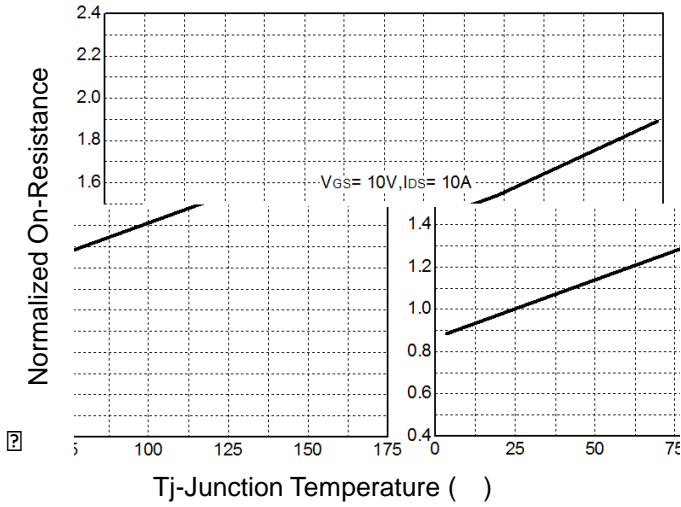


Figure 8: Source-Drain Diode Forward

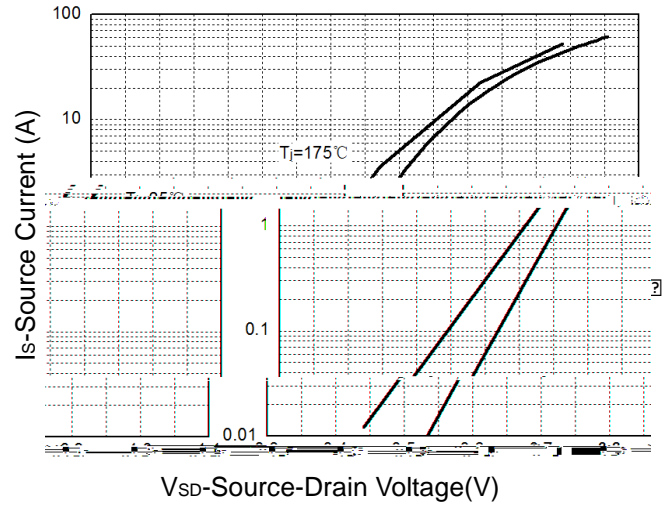


Figure 9: Capacitance Characteristics

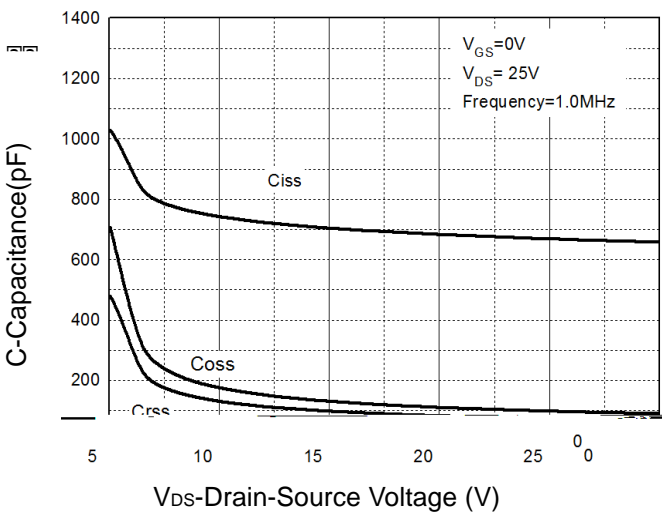
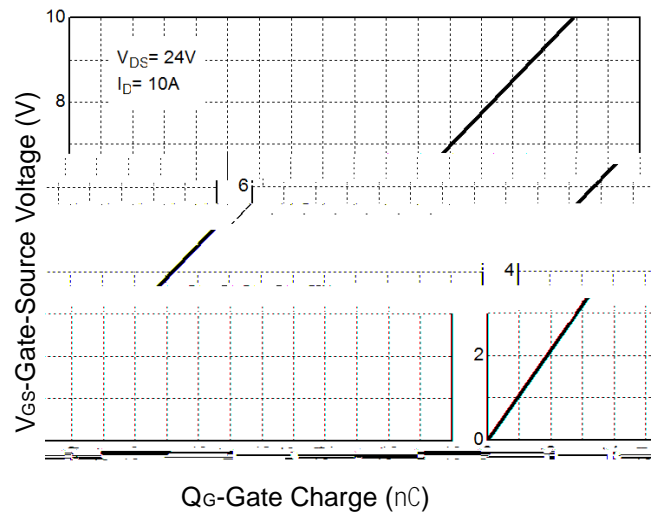
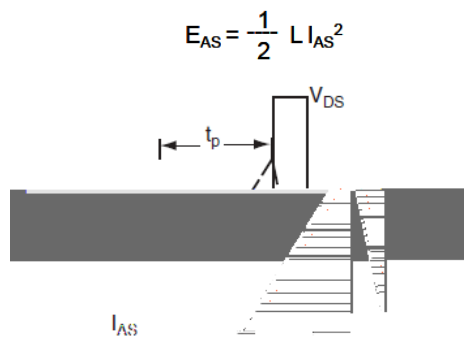
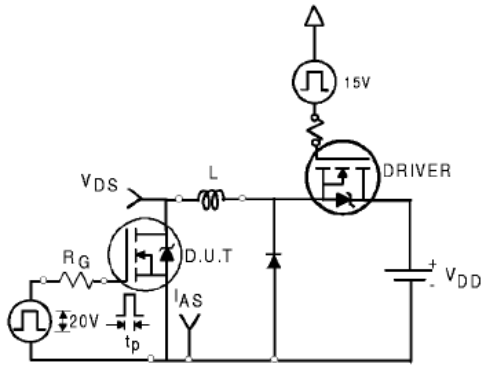


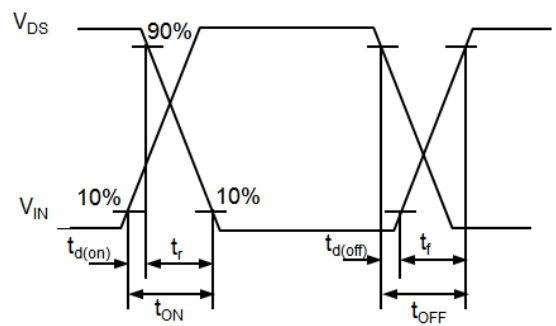
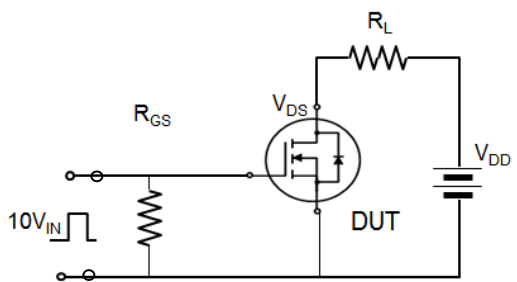
Figure 10: Gate Charge Characteristics



Avalanche Test Circuit



Switching Time Test Circuit



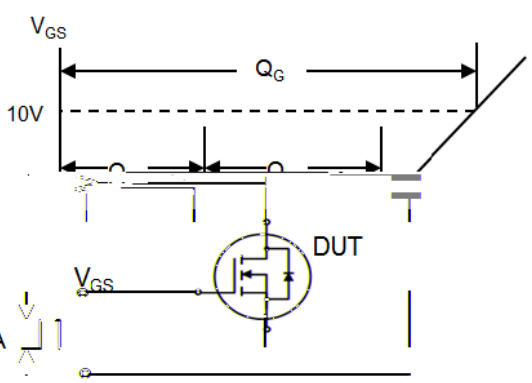
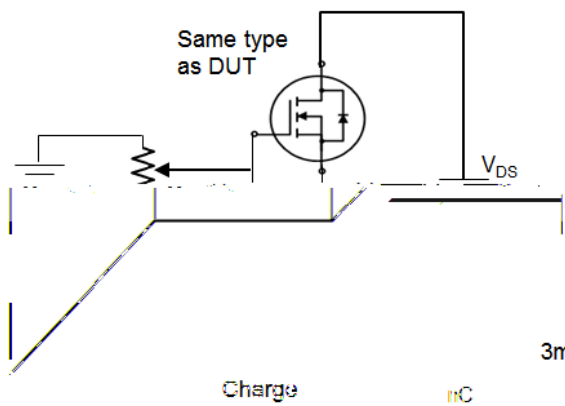
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Gate Charge Test Circuit

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P-Mosfet Electrical Characteristics ($T_C = 25^\circ\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HYG110C03LR1			Unit
			Min	Typ.	Max	
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_{DS}=-250\text{ A}$	-30	-		V
I_{DSS}	Drain-to-Source Leakage Current	$V_{DS}=-30V, V_{GS}=0V$	-	-	-1	A
		$T_J=125^\circ\text{C}$	-	-	-50	A
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_{DS}=-250\text{ A}$	-1	-1.9		

P-Mosfet Typical Operating Characteristics

Figure 7: On-Resistance vs. Temperature

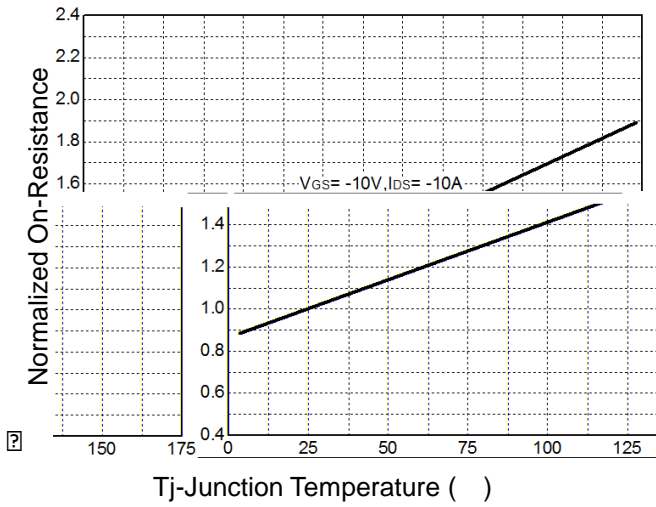


Figure 8: Source-Drain Diode Forward

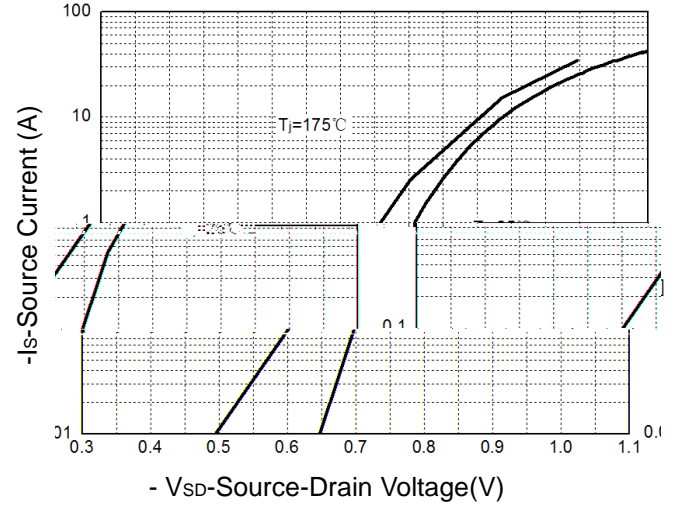


Figure 9: Capacitance Characteristics

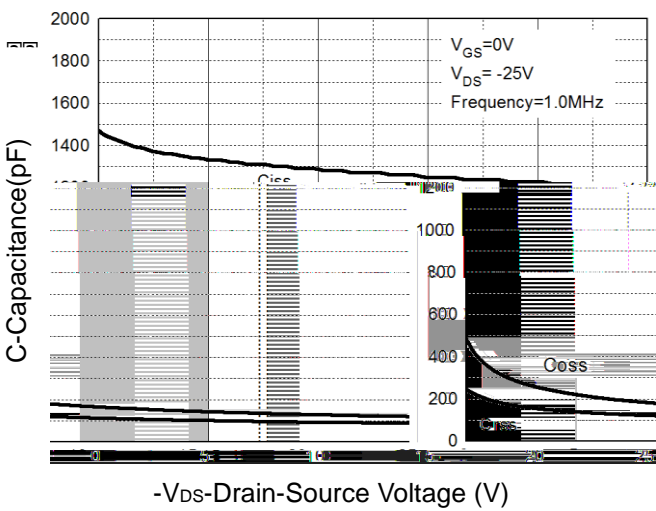
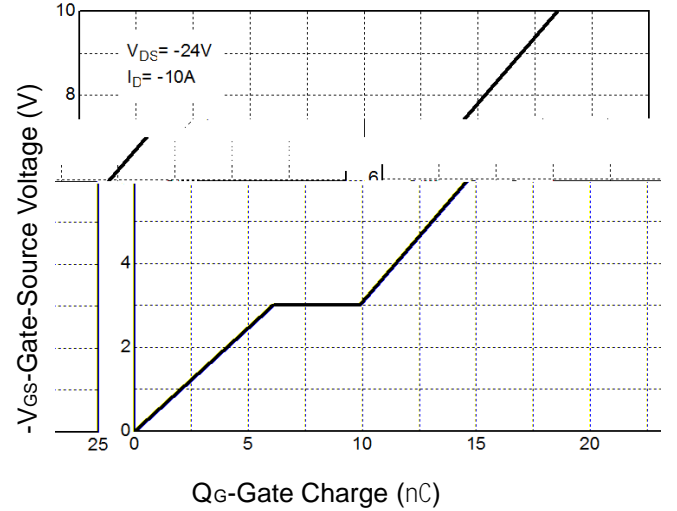
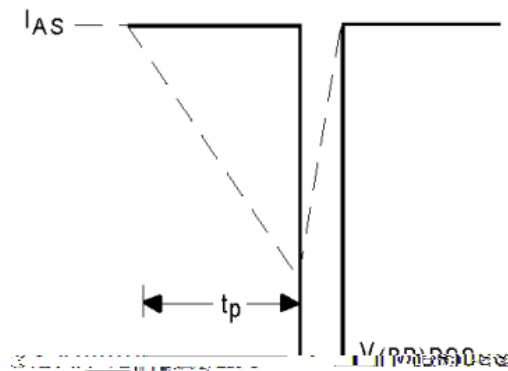
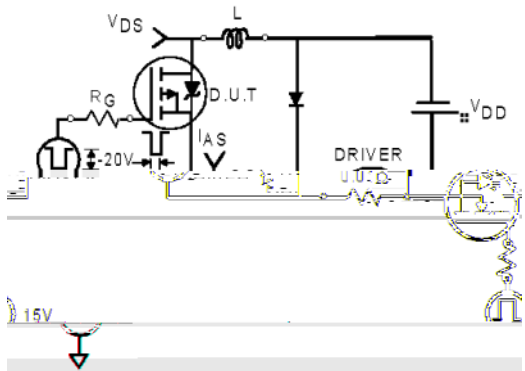


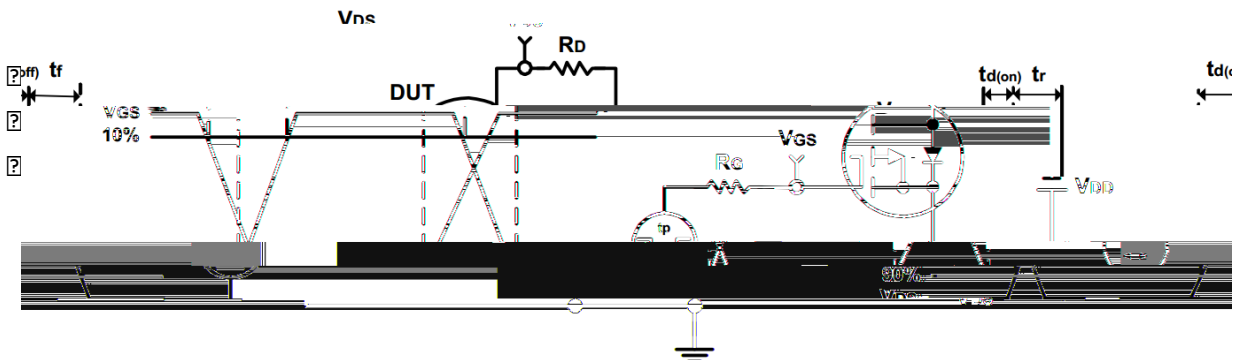
Figure 10: Gate Charge Characteristics



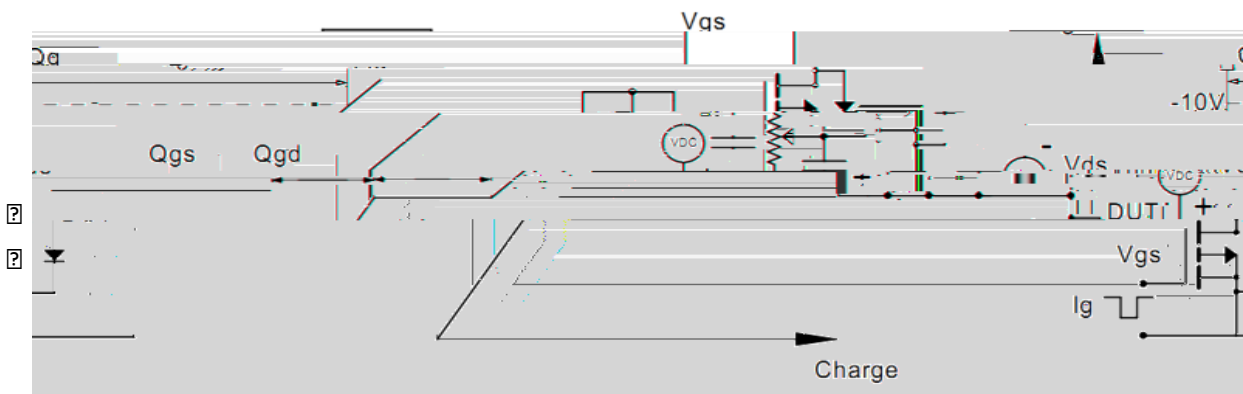
Avalanche Test Circuit



Switching Time Test Circuit



Gate Charge Test Circuit

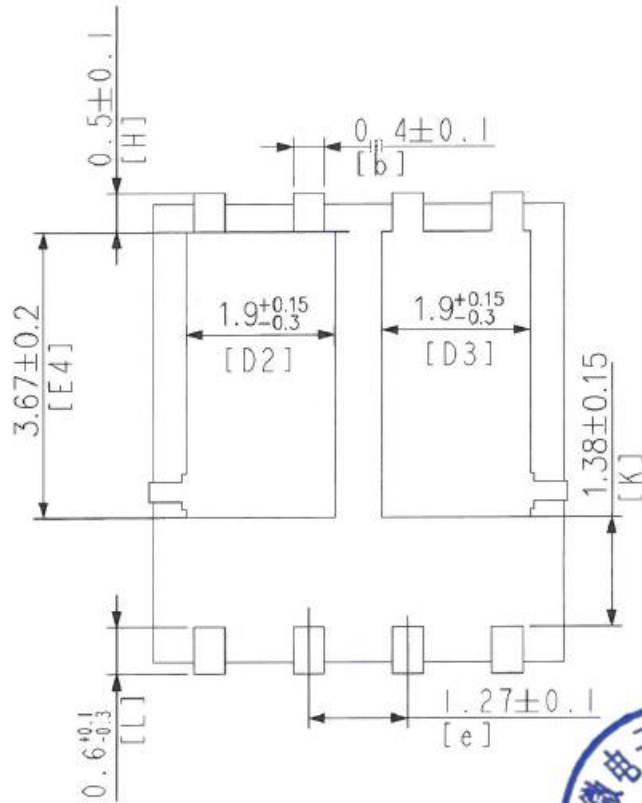
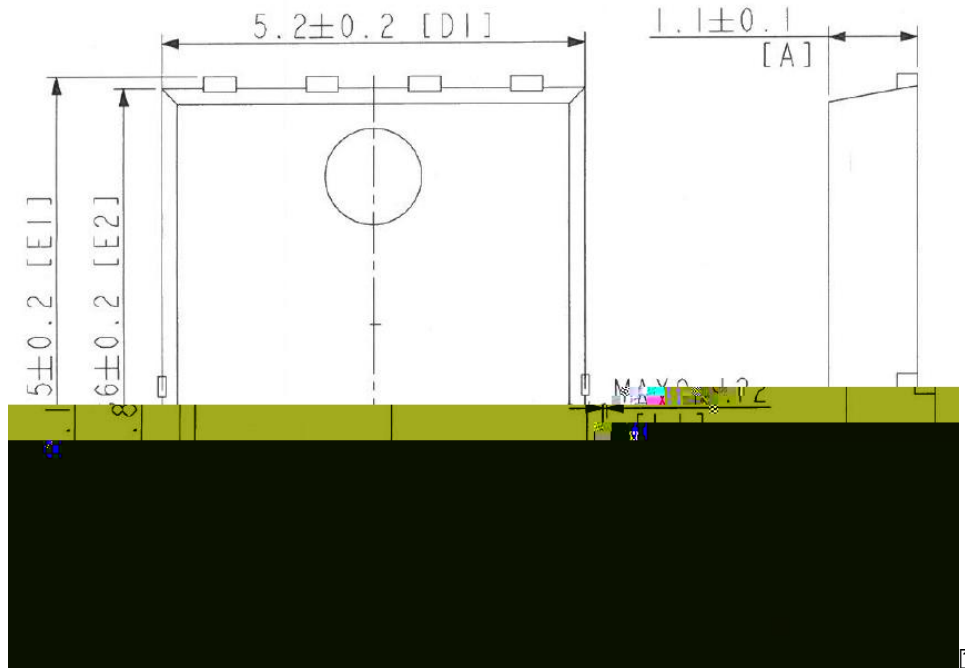


Device Per Unit

Package Type	Unit	Quantity
PDFN5*6-8L	Reel	5000

Package Information

PDFN5*6-8L



Classification Profile

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Classification Reflow Profiles

Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat & Soak		
Temperature min (T_{smin})	100 °C	150 °C
Temperature max (T_{smax})	150 °C	200 °C
Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-120 seconds
Average ramp-up rate (T_{smax} to T_P)	3 °C/second max.	3°C/second max.
Liquidous temperature (T_L)	183 °C	217 °C
Time at liquidous (t_L)	60-150 seconds	60-150 seconds
Peak package body Temperature (T_P)*	See Classification Temp in table 1	See Classification Temp in table 2
Time (t_P)** within 5°C of the specified classification temperature (T_c)	20** seconds	30** seconds
Average ramp-down rate (T_P to T_{smax})	6 °C/second max.	6 °C/second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.
*Tolerance for peak profile Temperature (T_P) is defined as a supplier minimum and a user maximum.		
** Tolerance for time at peak profile temperature (t_P) is defined as a supplier minimum and a user maximum.		

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Table 1. SnPb Eutectic Process Classification Temperatures (Tc)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350
2.5 mm	235 °C	220 °C
	220 °C	220 °C

Table 2. Pb-free Process Classification Temperatures (Tc)

Package Thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ 2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 mm 2.5 mm	260 °C	250 °C	245 °C
2.5 mm	250 °C	245 °C	245 °C

Reliability Test Program

Test item	Method	Description
SOLDERABILITY	JESD-22, B102	5 Sec, 245°C
HTRB	JESD-22, A108	168 Hrs \ 500Hrs\ 1000 Hrs, Bias @ 125°C
HTRB	JESD-22, A108	168 Hrs \ 500Hrs\ 1000 Hrs, Bias @ 125°C
PCT	JESD-22, A102	96 Hrs, 100%RH, 2atm, 121°C
TCT	JESD-22, A104	500 Cycles, -55°C~150°C

Customer Service

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