

30V Complementary MOSFET

Feature

Pin Description

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)

?

P - Channel

Vds = -30V

- 19 A (Vgs= -10V)

22 mΩ (Vgs= -10V)

40 mΩ (Vgs= -4.5V)

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

Channel	Unit
	V
	V
	°C
	°C
	A
	A
	A
5	A
	W
	W
	°C/W
	°C/W

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

Symbol	Parameter	Test Conditions	HYG110C03LR1			Unit
			Min	Typ.	Max	
Static Characteristics						
B _{VDS}	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)} *	Drain-Source On-State Resistance	V _{GS} =10V, I _{DS} =10A	-	8.8	11	m
		V _{GS} =4.5V, I _{DS} =8A	-	13.4	18	
Diode Characteristics						
V _{SD} *	Diode Forward Voltage	I _{SD} =1A, V _{GS} =0V	-	0.75	1.0	V
t _{rr}	Reverse Recovery Time	I _{SD} =10A, dI _{SD} /dt=100A/	-	7.2	-	ns
Q _{rr}	Reverse Recovery Charge		-	2.1	-	nC

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

Symbol	Parameter	Test Conditions	HYG110C03LR1			Unit
			Min	Typ.	Max	
Dynamic Characteristics						
R _G						

N-Mosfet Typical Operating Characteristics

Figure 1: Power Dissipation

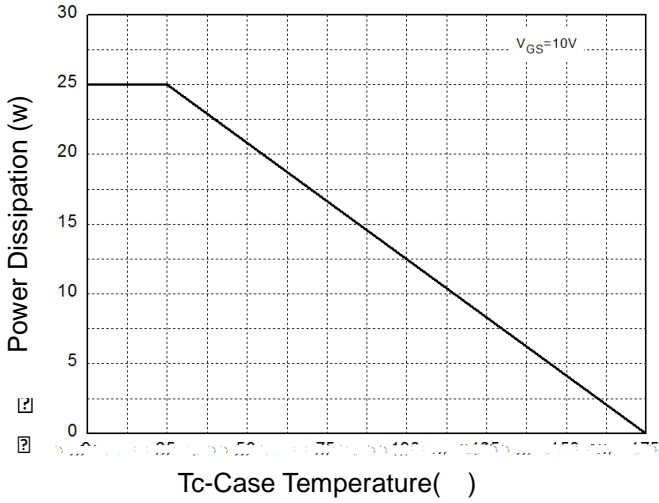


Figure 2: Drain Current

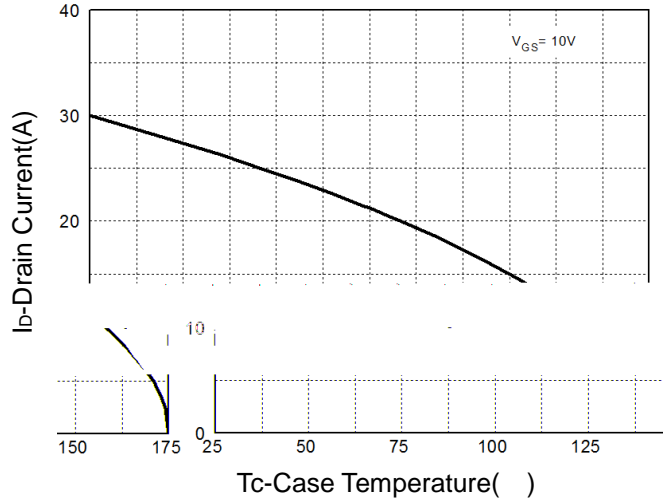


Figure 3: Safe Operation Area

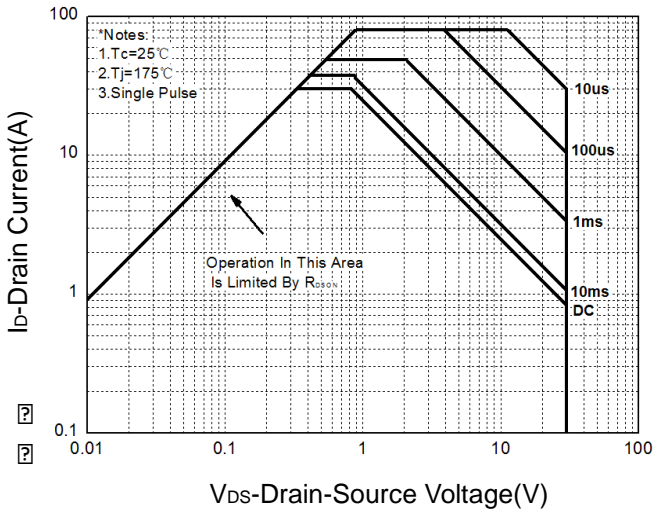


Figure 4: Thermal Transient Impedance

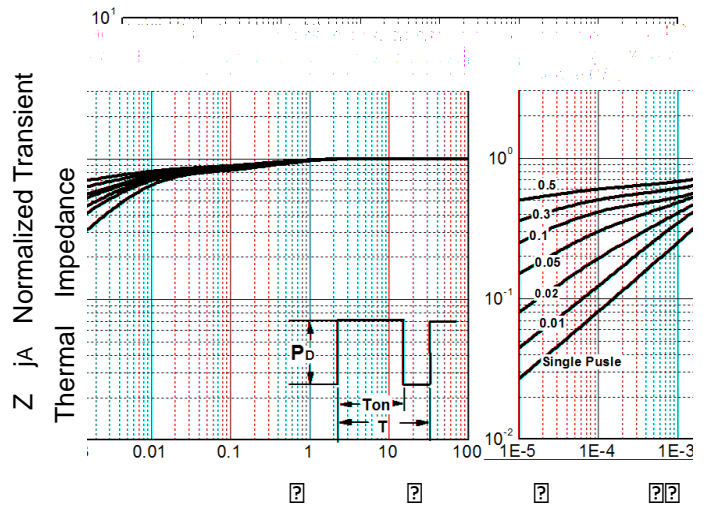


Figure 5: Output Characteristics

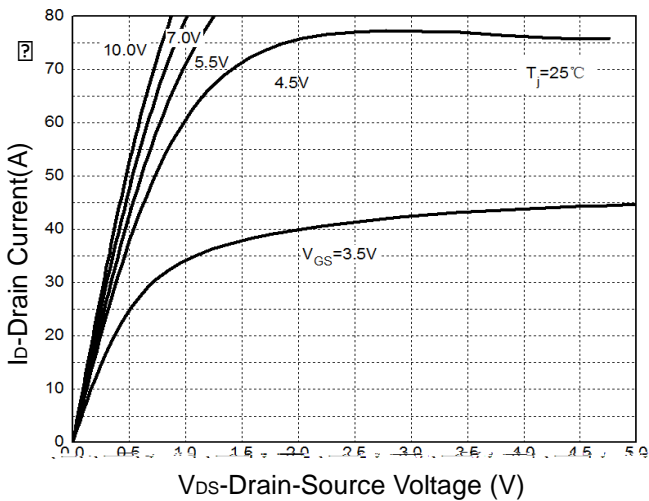
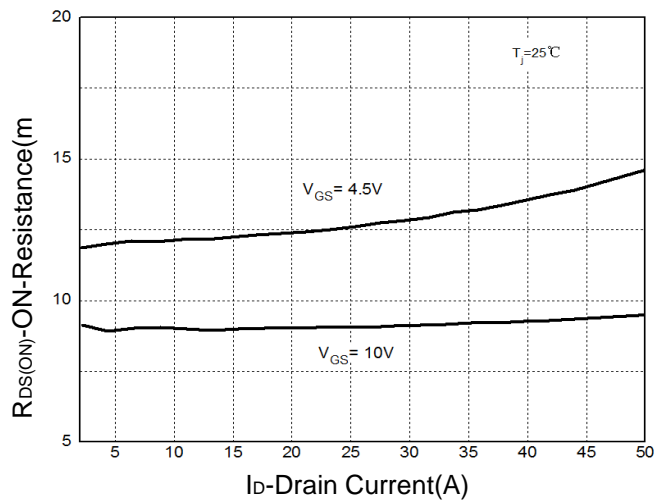


Figure 6: Drain-Source On Resistance



N-Mosfet Typical Operating Characteristics

Figure 7: On-Resistance vs. Temperature

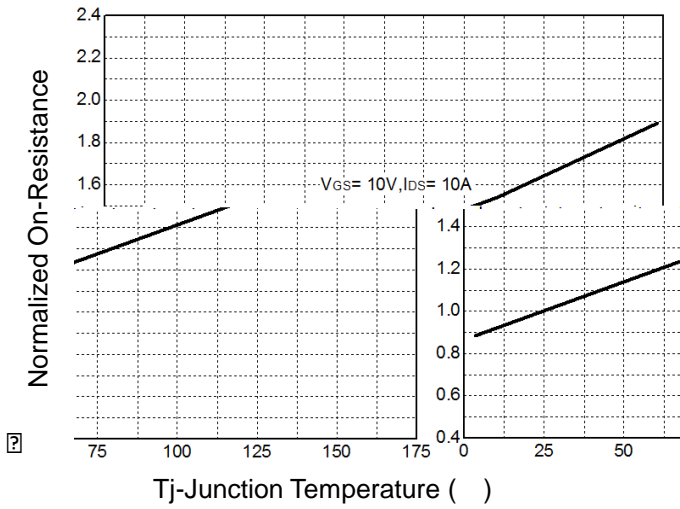


Figure 8: Source-Drain Diode Forward

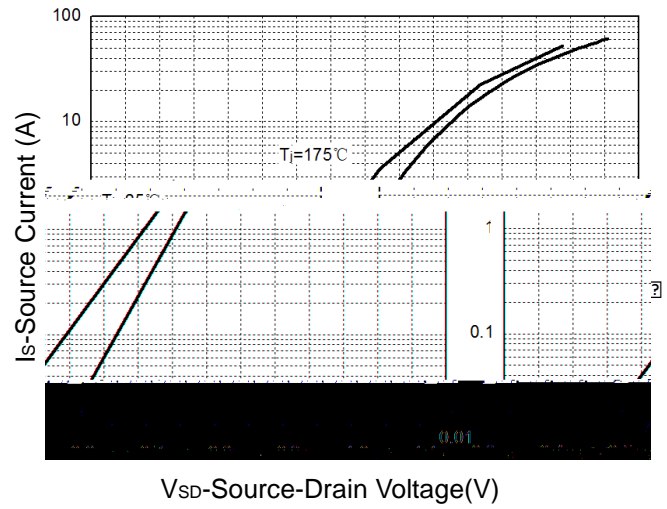


Figure 9: Capacitance Characteristics

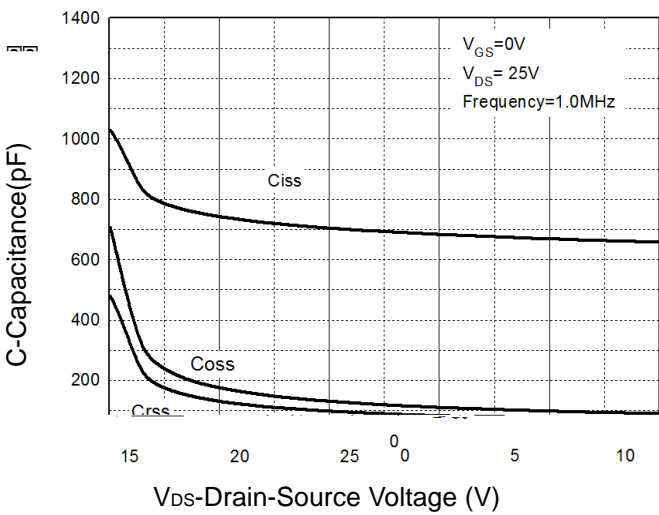
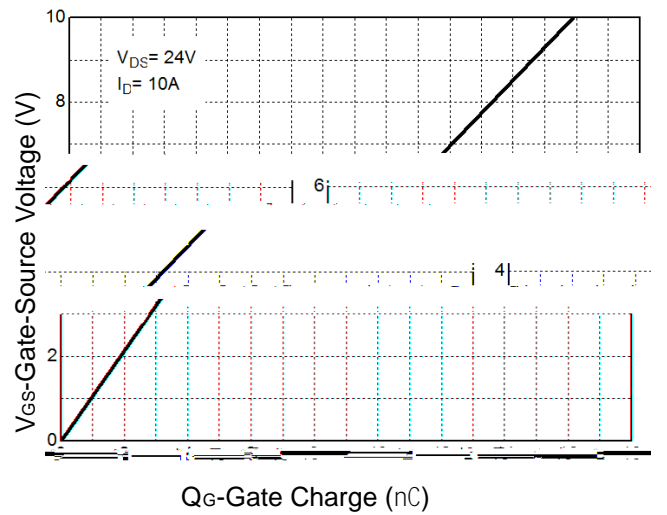
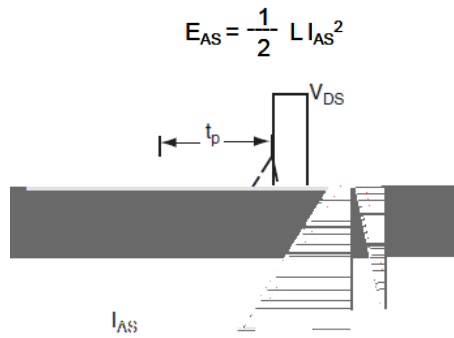
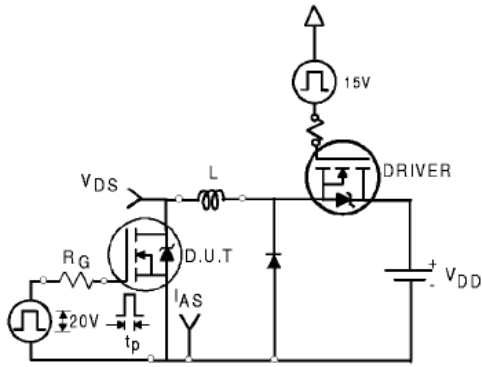


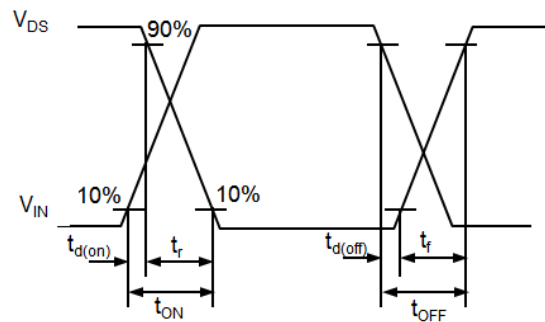
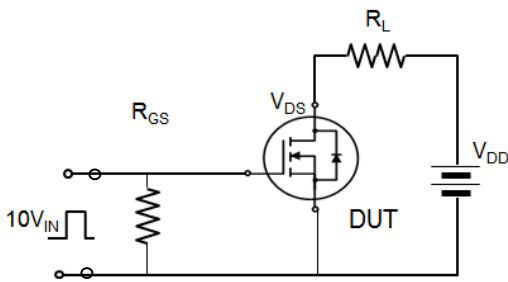
Figure 10: Gate Charge Characteristics



Avalanche Test Circuit



Switching Time Test Circuit



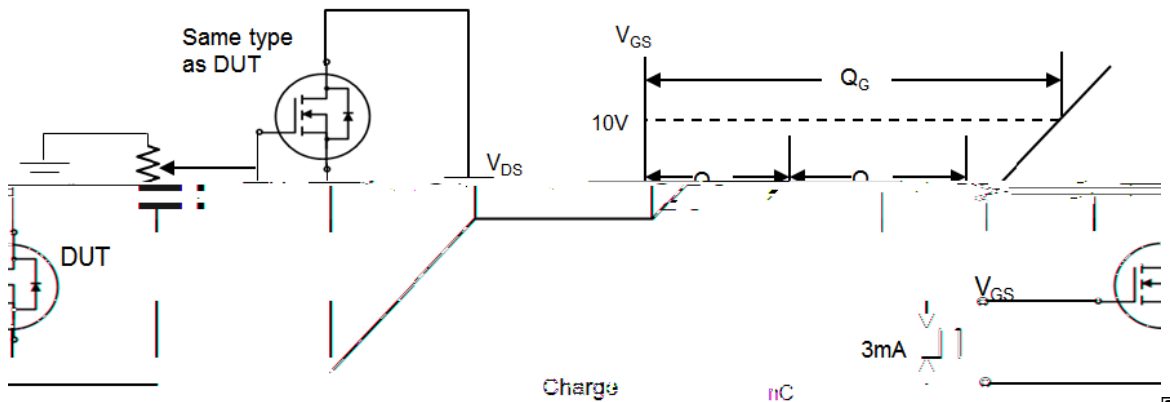
?

?

?

Gate Charge Test Circuit

?



?

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	-1.998		

P-Mosfet Typical Operating Characteristics

Figure 7: On-Resistance vs. Temperature

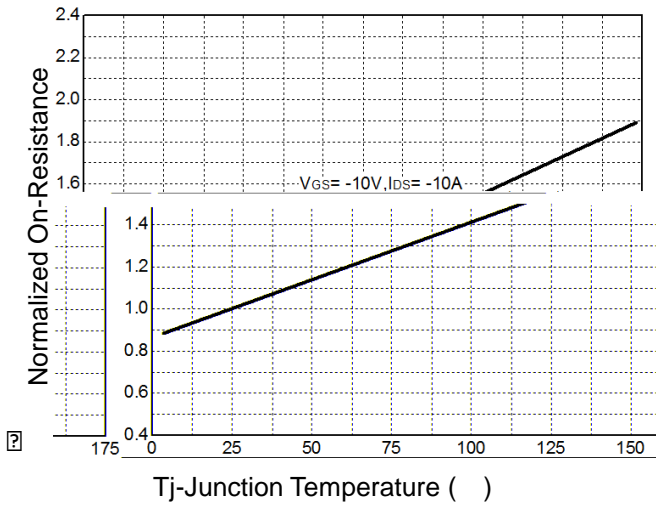


Figure 8: Source-Drain Diode Forward

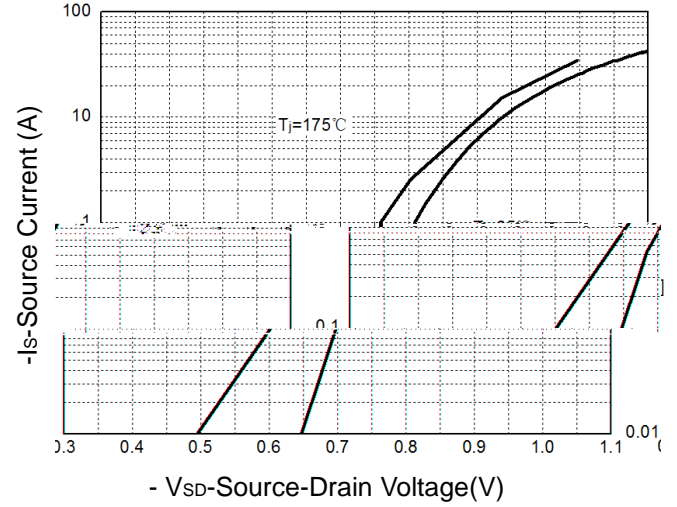


Figure 9: Capacitance Characteristics

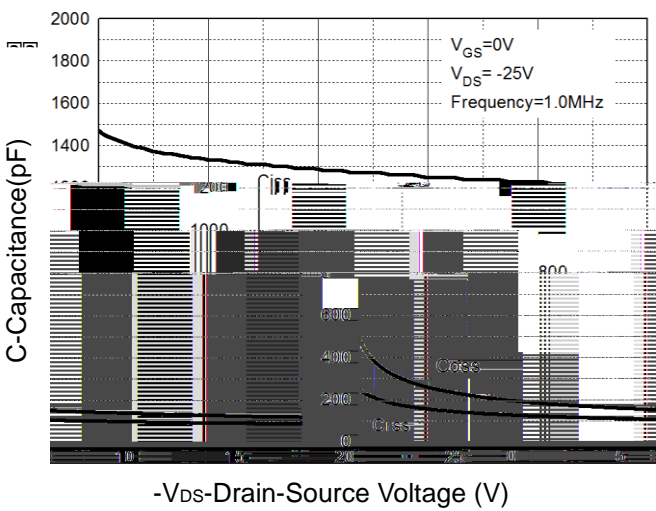
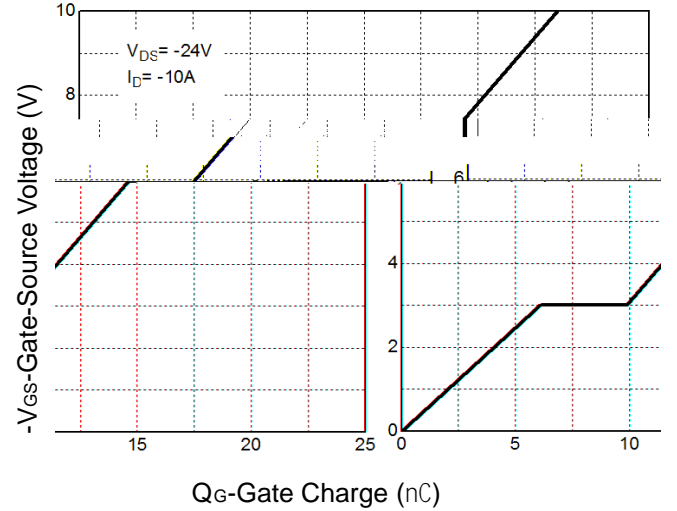
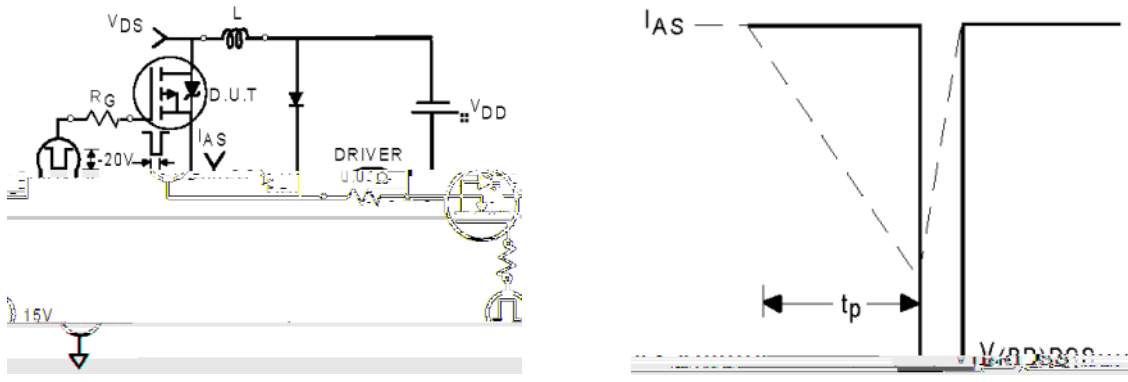


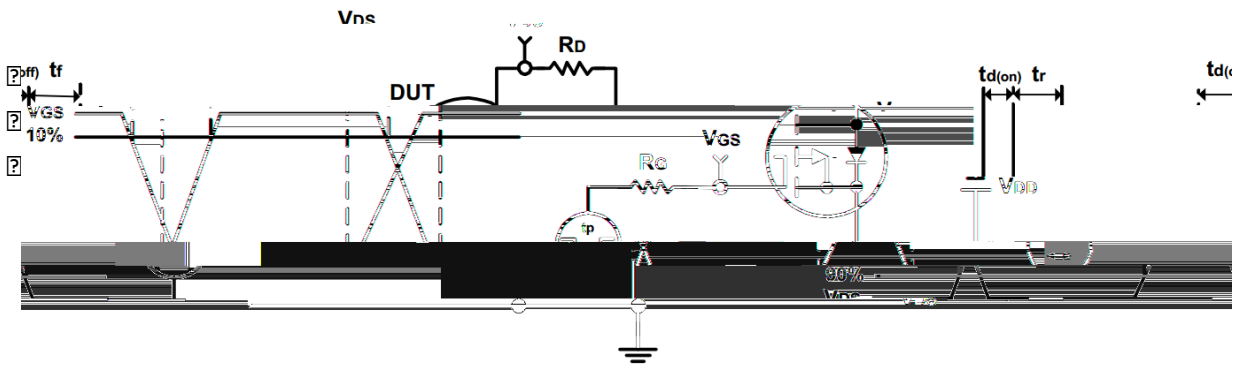
Figure 10: Gate Charge Characteristics



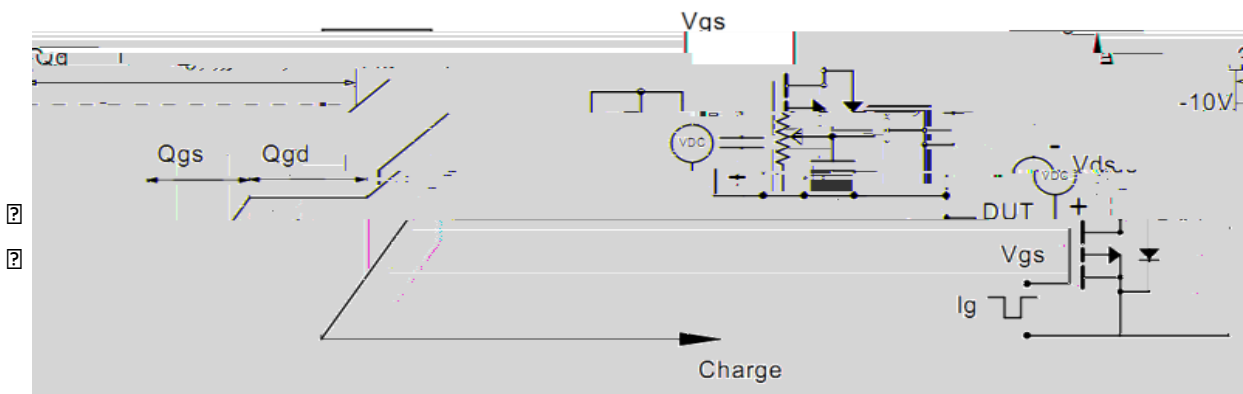
Avalanche Test Circuit



Switching Time Test Circuit



Gate Charge Test Circuit

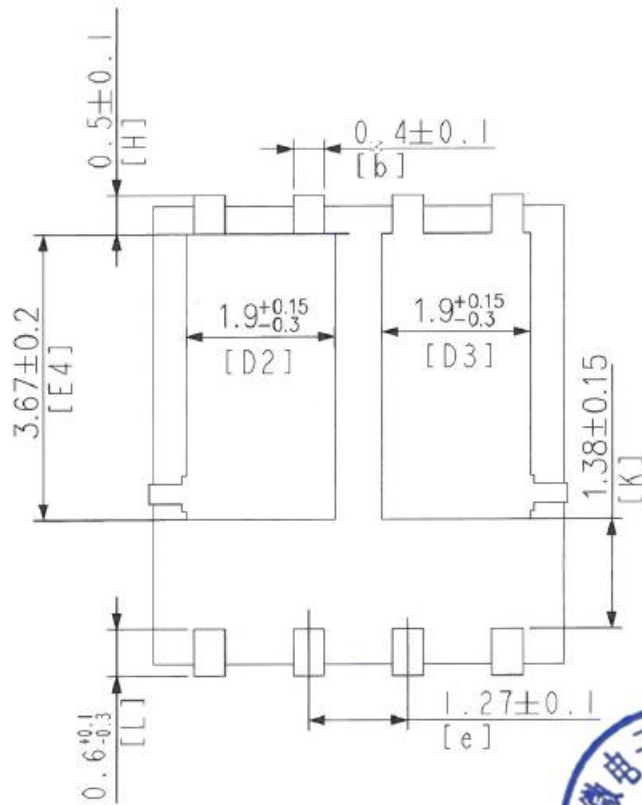
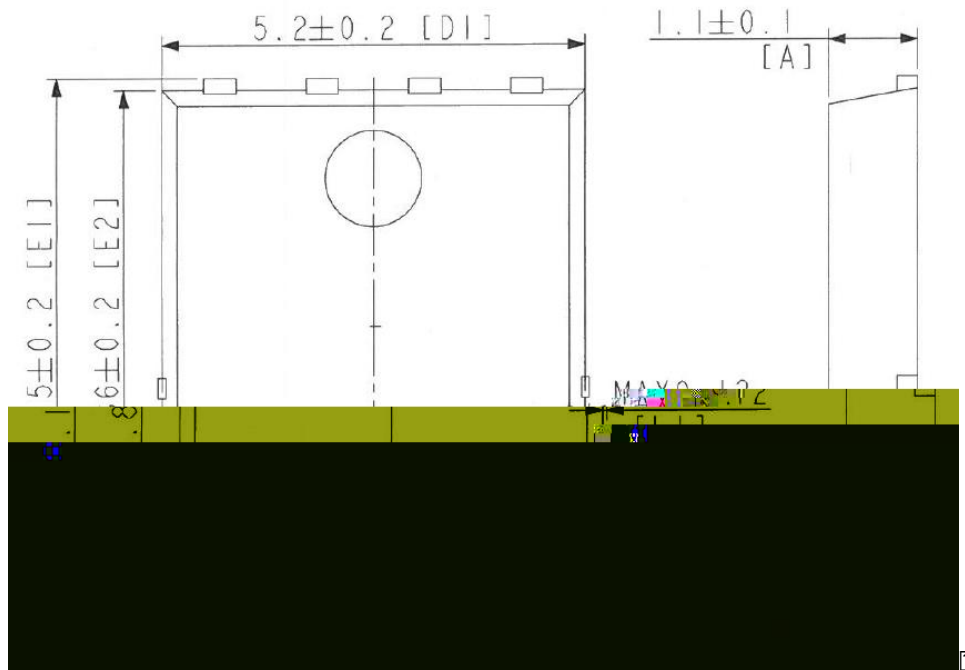


Device Per Unit

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

Package Information

PDFN5*6-8L



Classification Profile

?

?

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.		

?

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

Worldwide Sales and Service: sales@hymexa.com

Technical Support: Technology@hymexa.com

Huayi Microelectronics Co., Ltd.

No.8928, Shangji Road, Economic and Technological Development Zone, Xi'an, China

TEL: (86-029) 86685706

FAX: (86-029) 86685705

E-mail: sales@hymexa.com

Web net: www.hymexa.com