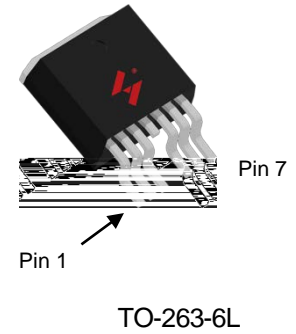


N-Channel Enhancement Mode MOSFET

Feature

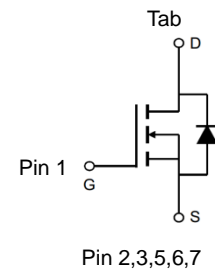
- 60V/400A
 $R_{DS(ON)}=0.95\ m\ (typ.)@V_{GS} = 10V$
- 100% Avalanche Tested
- Reliable and Rugged
- Halogen-Free Devices Available (RoHS Compliant)

Pin Description




Applications

- Switching application
- Energy Storage
- Battery management



Ordering and Marking Information

 <p style="margin: 0;"> B6 HYG010N06 XYMXXXXXX </p>	<p>Package Code B6:TO-263-6L</p> <p>Date Code XYMXXXXXX</p>
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Note: HUAYI lead-free products contain molding compounds/die attach materials and 100% matte tin plate Termination finish; which are fully compliant with RoHS. HUAYI lead-free products meet or exceed the lead-free requirements of IPC/JEDEC J-STD-020 for MSL classification at lead-free peak reflow temperature. HUAYI defines “Green” to mean lead-free (RoHS compliant) and halogen free (Br or Cl does not exceed 900ppm by weight in homogeneous material and total of Br and Cl does not exceed 1500ppm by weight).

HUAYI reserves the right to make changes, corrections, enhancements, modifications, and improvements to this product and/or to this document at any time without notice.

Absolute Maximum Ratings

Symbol	Parameter	Rating	Unit
Common Ratings (Tc=25°C Unless Otherwise Noted)			
V _{DSS}	Drain-Source Voltage	60	V
V _{GSS}	Gate-		

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

Symbol	Parameter	Test Conditions	HYG010N06NS1			Unit
			Min	Typ.	Max	
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=500KHz	-	0.67	-	
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Frequency=500KHz	-	13100	-	pF
C _{oss}	Output Capacitance		-	4020	-	
C _{rss}	Reverse Transfer Capacitance		-	113	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, R _G =2.5 I _{DS} = 100A, V _{GS} = 10V	-	35	-	ns
T _r	Turn-on Rise Time		-	106	-	
t _{d(OFF)}	Turn-off Delay Time		-		-	

Typical Operating Characteristics

Figure 1: Power Dissipation

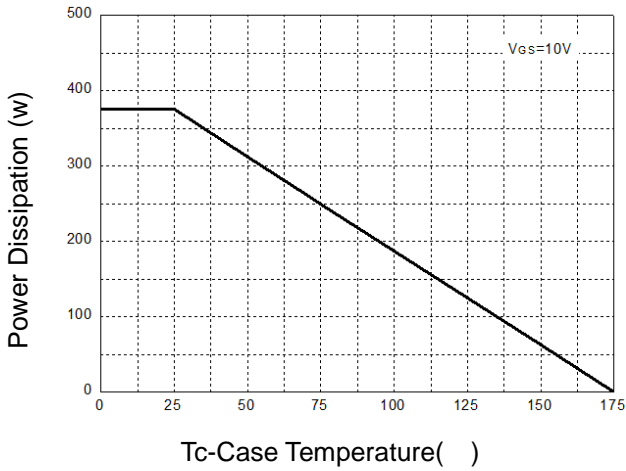


Figure 2: Drain Current

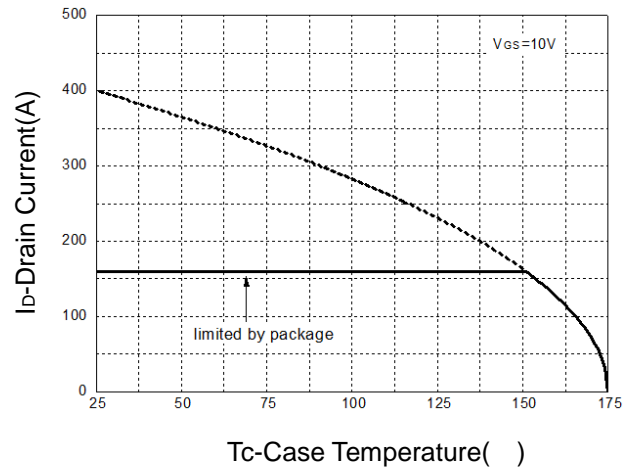


Figure 3: Safe Operation Area

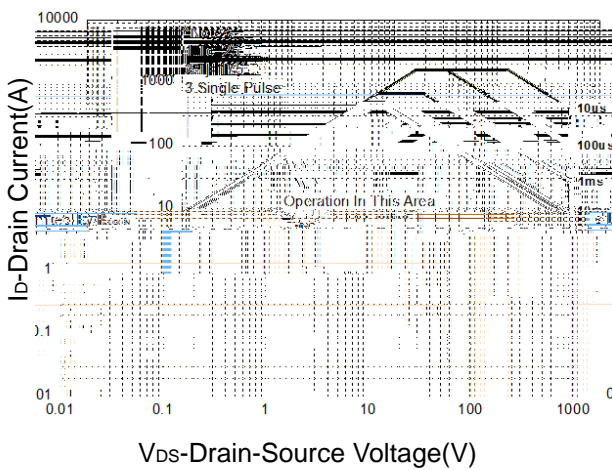


Figure 4: Thermal Transient Impedance

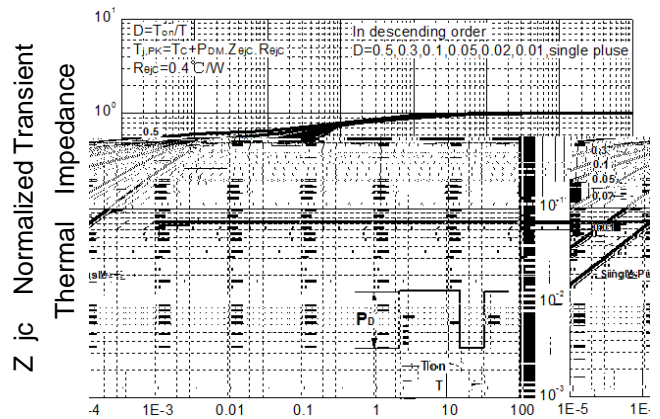


Figure 5: Output Characteristics

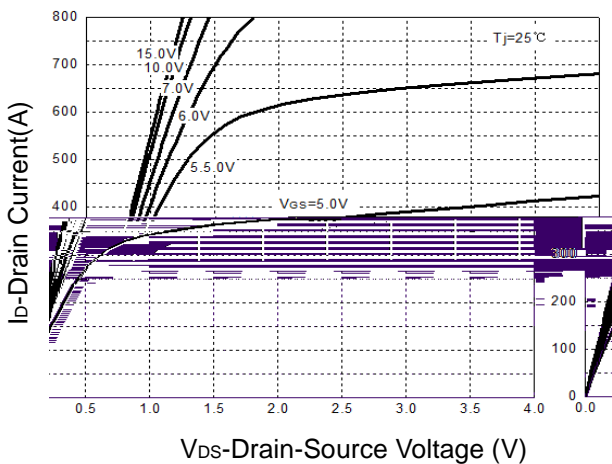
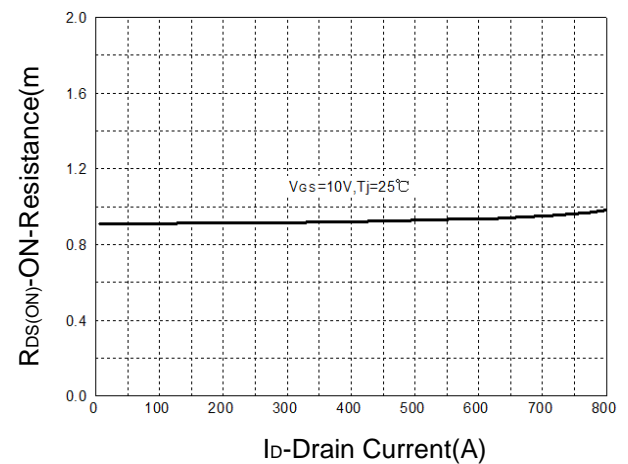


Figure 6: Drain-Source On Resistance



Typical Operating Characteristics(Cont.)

Figure 7: On-Resistance vs. Temperature

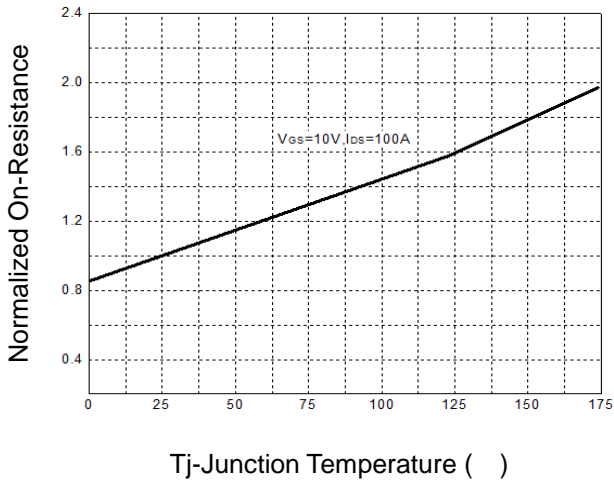


Figure 8: Source-Drain Diode Forward

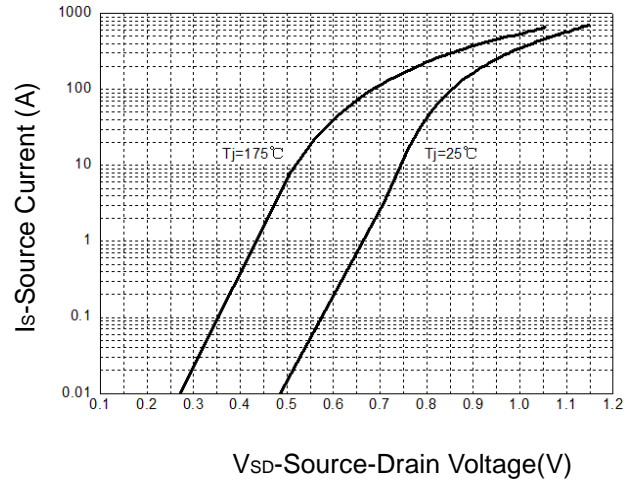


Figure 9: Capacitance Characteristics

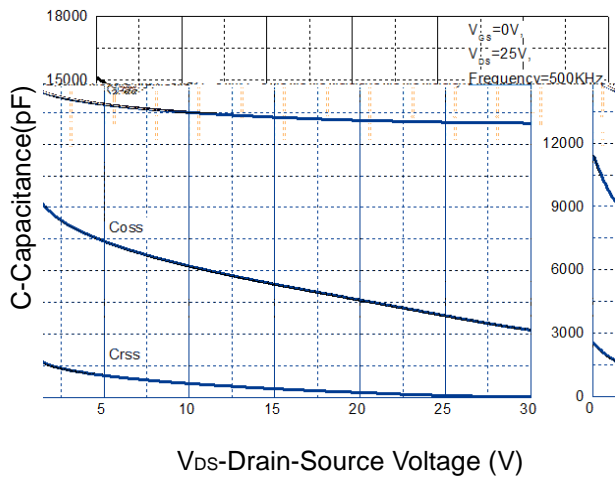
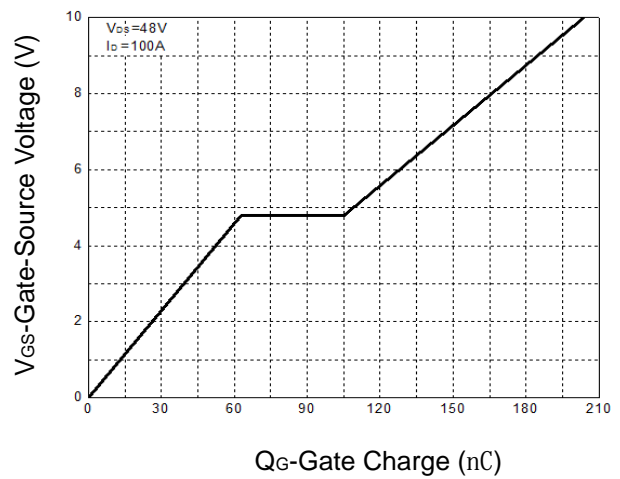
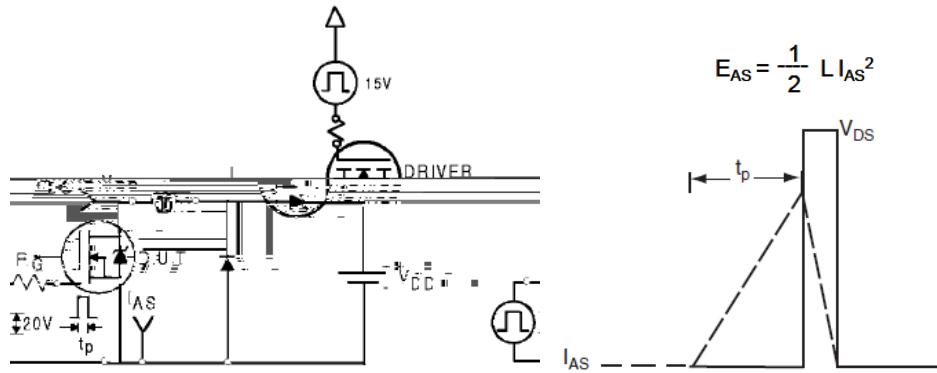


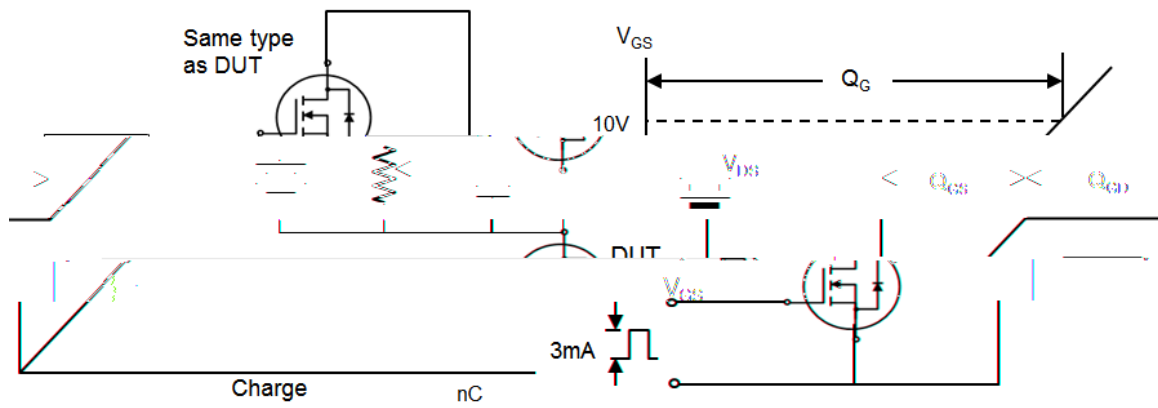
Figure 10: Gate Charge Characteristics



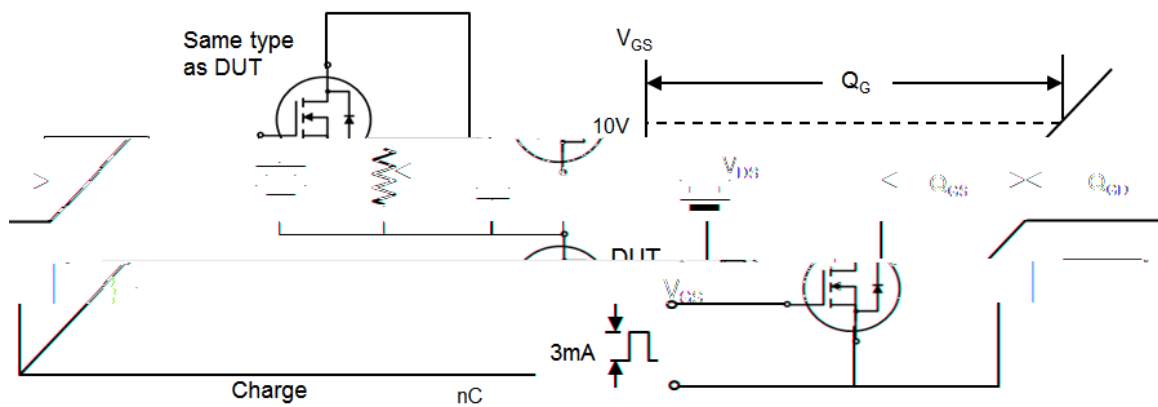
Avalanche Test Circuit



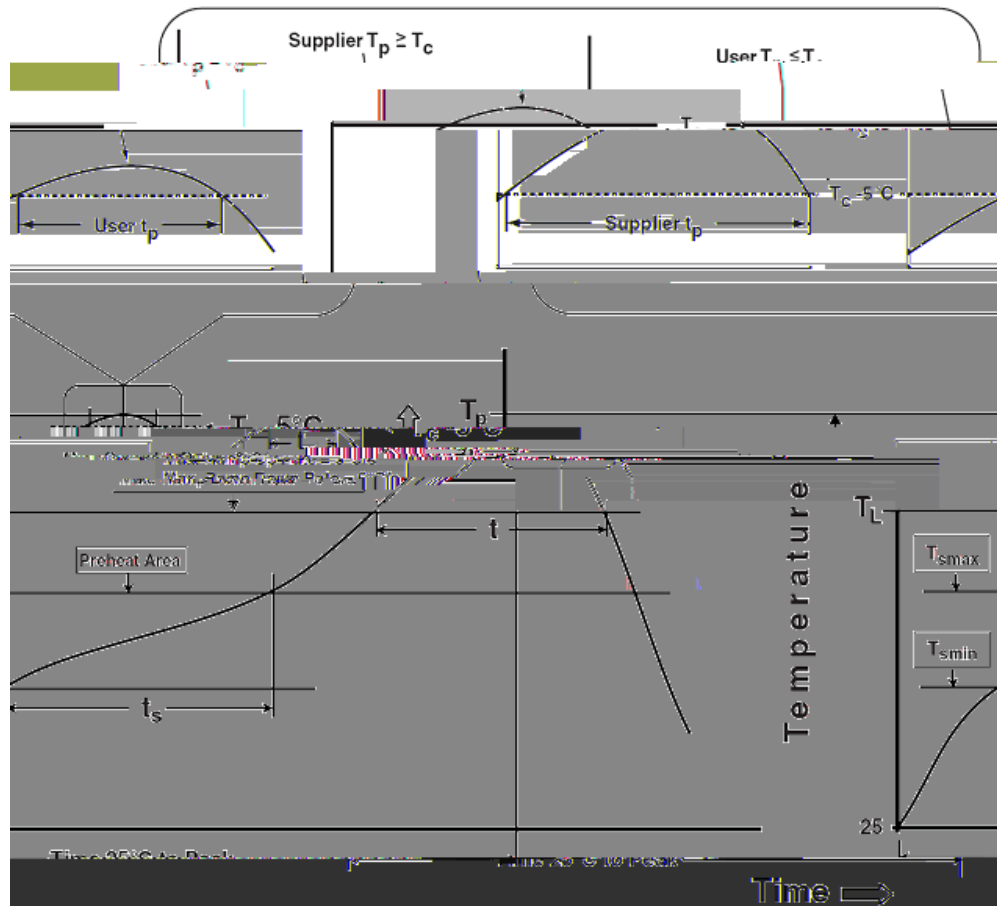
Switching Time Test Circuit



Gate Charge Test Circuit



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 mm³ <350	Volume mm³ 350
2.5 mm	235 °C	220 °C
	220 °C	220 °C

Table 2. Pb-free Process –1084.41 1024.41 1044.41