

HYG160N06LS1C1

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-Source Voltage	±20	V
T _J	Junction Temperature Range	-55 to 175	°C
T _{STG}			

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

Symbol	Parameter	Test Conditions	HYG160N06LS1			Unit
			Min	Typ.	Max	
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz	-	0.95	-	
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Frequency=1MHz	-	585	-	pF
C _{oss}	Output Capacitance		-	204	-	
C _{rss}	Reverse Transfer Capacitance		-	13	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =30V, R _G =4 I _{DS} =20A, V _{GS} =10V	-	8	-	ns
T _r	Turn-on Rise Time		-	29	-	
t _{d(OFF)}	Turn-off Delay Time		-	16	-	
T _f	Turn-off Fall Time		-	38	-	

Gate Charge Characteristics

Typical Operating Characteristics

Figure 1: Power Dissipation

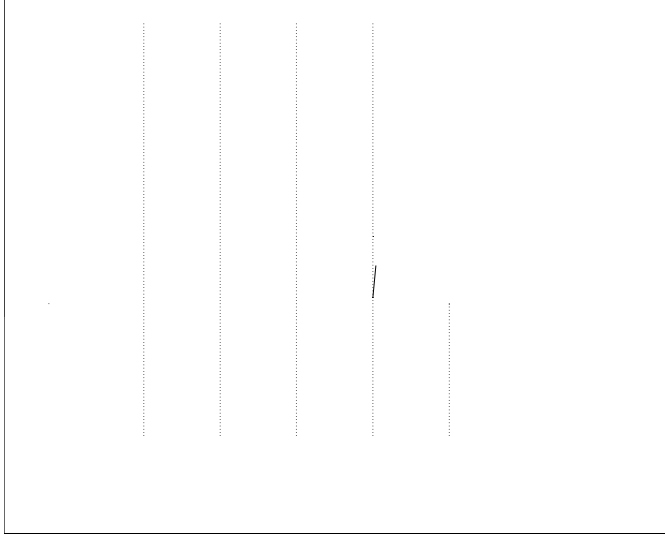


Figure 2: Drain Current



Figure 3: Safe Operation Area

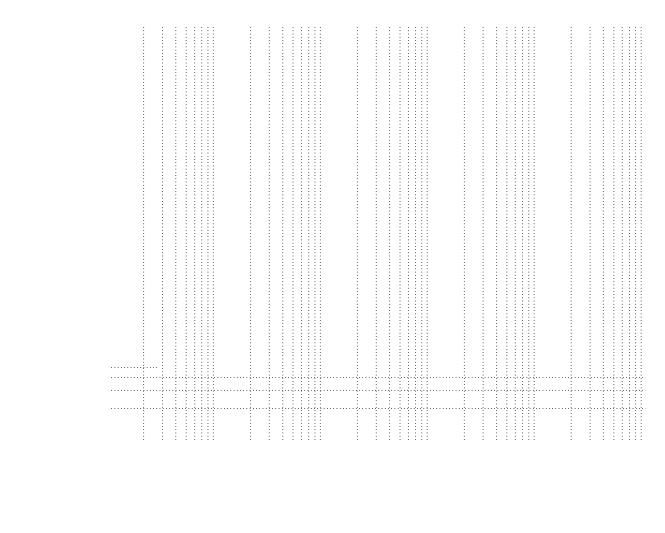


Figure 4: Thermal Transient Impedance

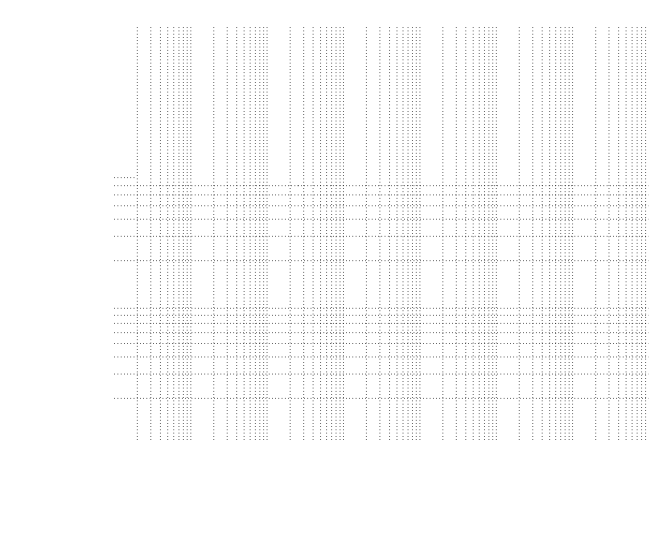


Figure 5: Output Characteristics

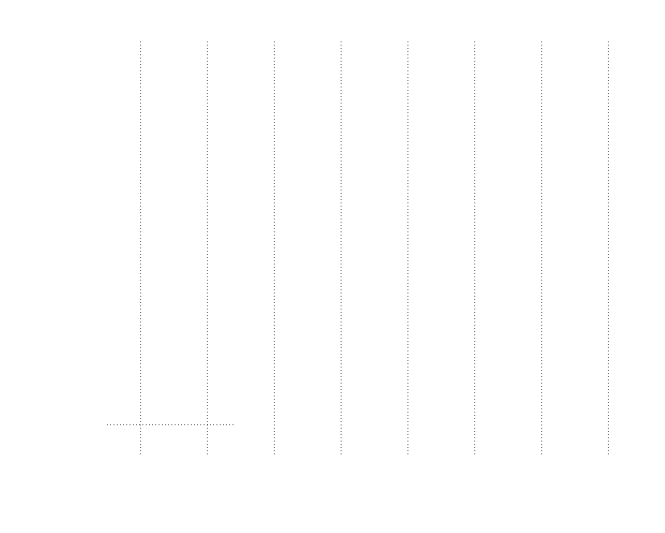
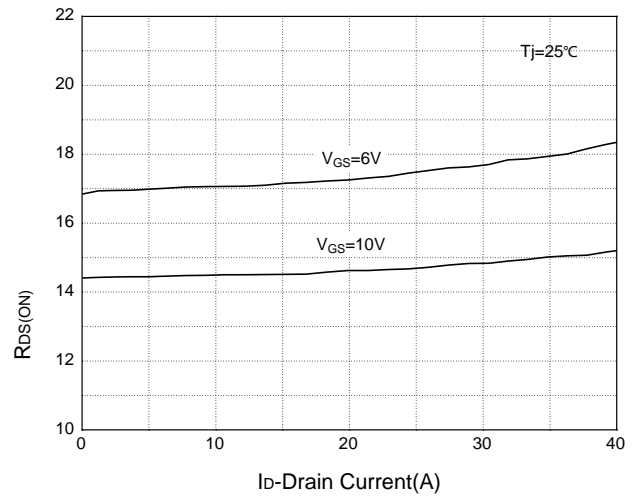


Figure 6: Drain-Source On Resistance



Typical Operating Characteristics(Cont.)

Figure 7: On-Resistance vs. Temperature

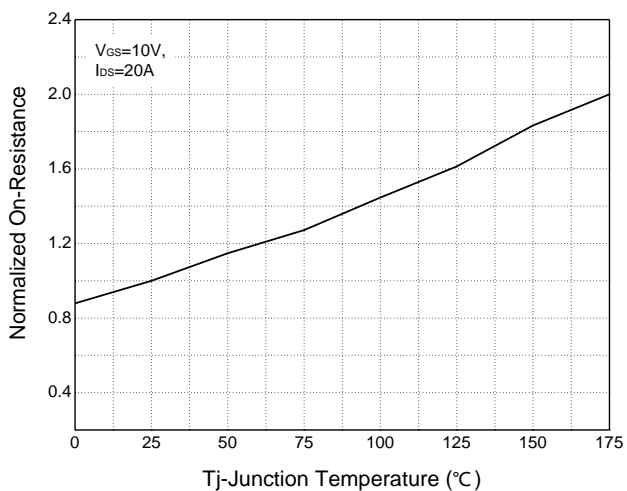


Figure 8: Source-Drain Diode Forward

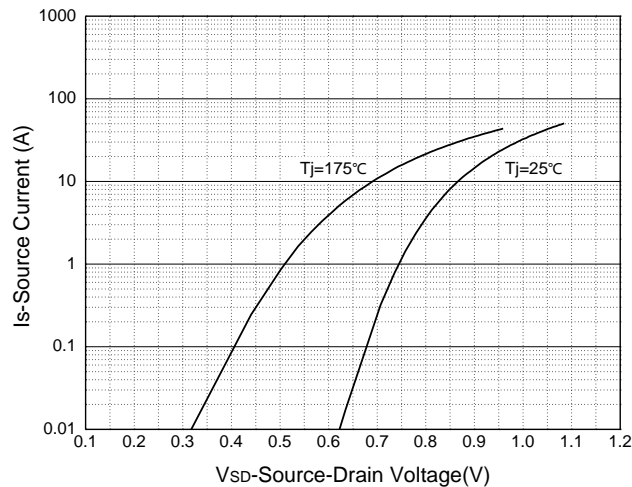


Figure 9: Capacitance Characteristics

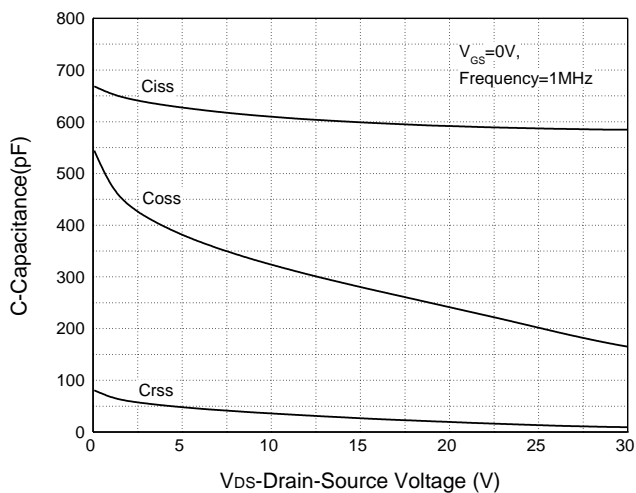
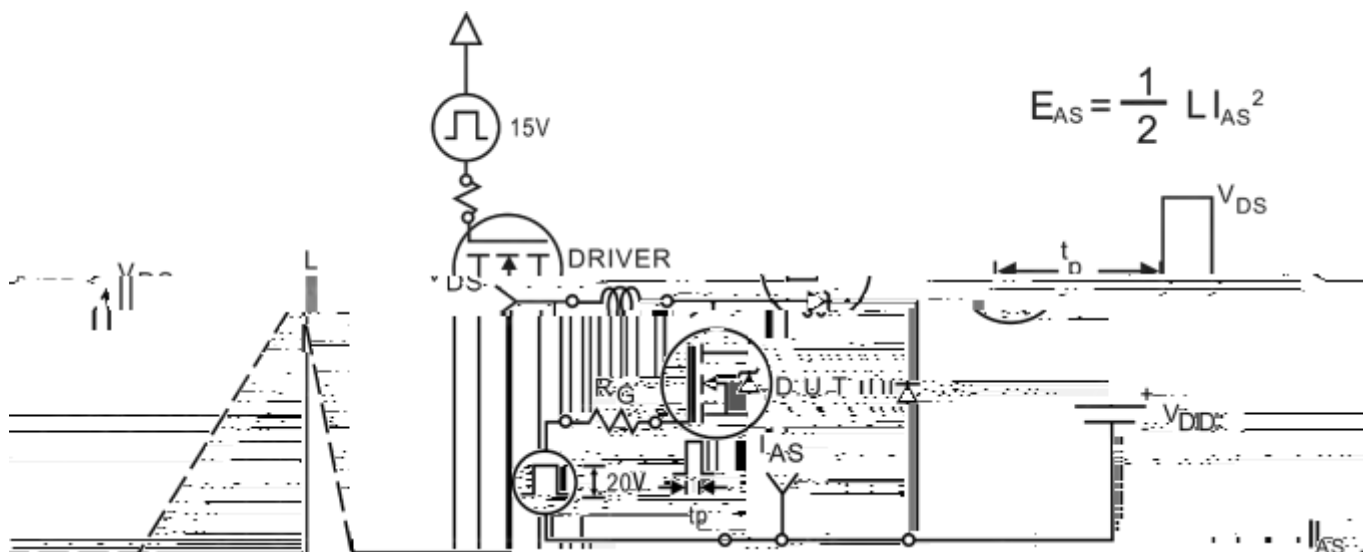


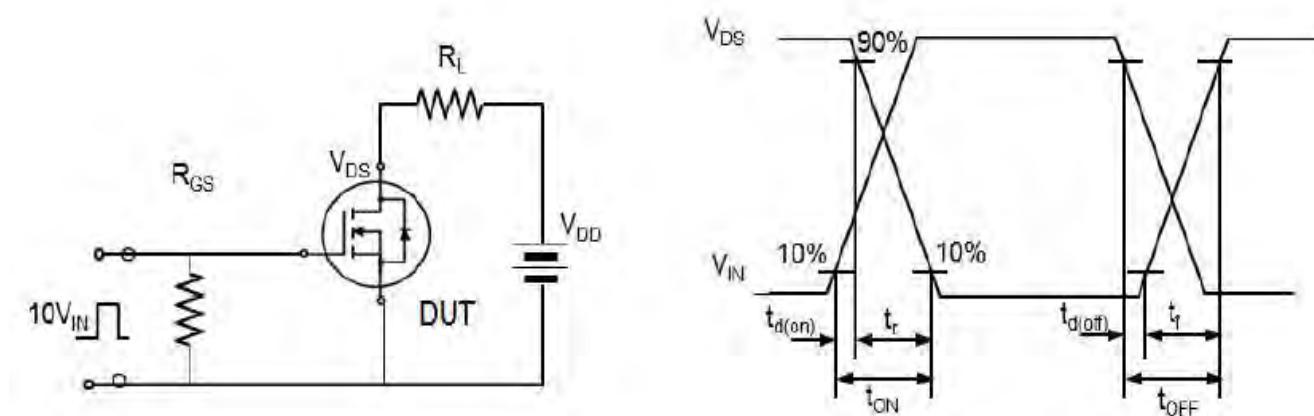
Figure 10: Gate Charge Characteristics



Avalanche Test Circuit



Switching Time Test Circuit



Gate Charge Test Circuit

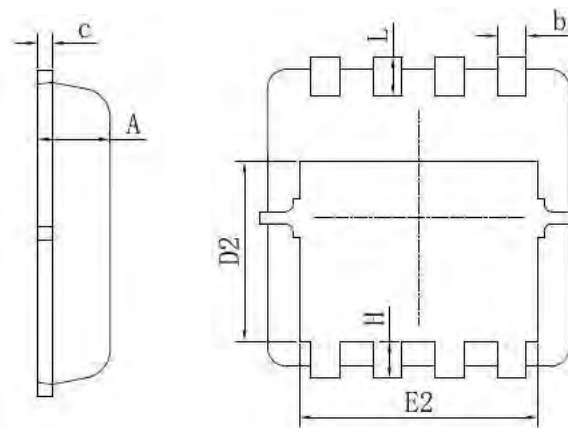
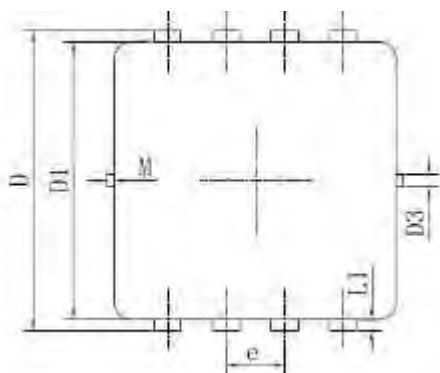
Device Per Unit

Package Type	Unit	Quantity
PDFN8L(3.3x3.3)	Reel	6500

Package Information

PDFN8L(3.3x3.3)

(unit:mm)



COMMON DIMENSIONS			
SYMBOL	mm		
	MIN	NOM	MAX
A	0.715	0.75	0.785
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	3.20
D2	1.78	1.88	1.98
D3	\	0.20	\
E	3.20	3.30	3.40
E1	3.10	3.20	3.30
E2	2.44	2.54	2.64
e	0.65BSC		
H	0.34	0.39	0.44
L	0.35	0.40	0.45
L1	\	0.13	\
θ	\	10°	10°
M	\	\	0.10
*Not specified			

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	Volume mm ³
	<350	≥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	Volume mm ³	Volume mm ³
	<350	350-2000	≥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	168/500 Hrs, Bias @ 150°C
HTGB	JESD-22, A108	168 /500 Hrs, V _{gs} 100% @ 150°C
PCT	JESD-22, A102	96 Hrs, 100%RH, 2atm, 121°C
TCT	JESD-22, A104	250/500 Cycles, -55°C~150°C

Customer Service

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