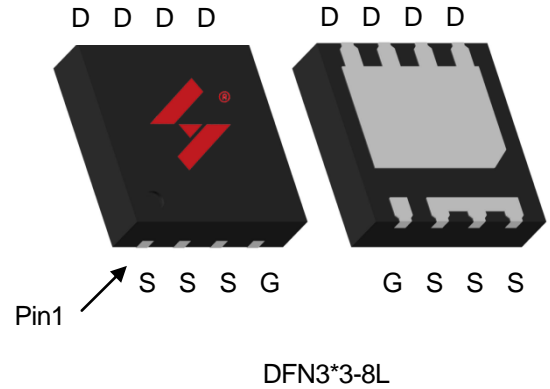


Single N-Channel Enhancement Mode MOSFET

Feature

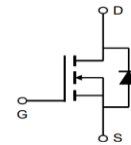
- 30V/55A
 $R_{DS(ON)} = 3.3m \text{ (typ.) @ } V_{GS} = 10V$
 $R_{DS(ON)} = 4.3 m \text{ (typ.) @ } V_{GS} = 4.5V$
- 100% Avalanche Tested
- Reliable and Rugged
- Halogen Free and Green Devices Available (RoHS Compliant)

Pin Description



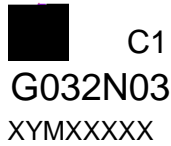
Applications

- Power Management for DC/DC
- Switching Application
- Battery Protection



Single N-Channel MOSFET

Ordering and Marking Information

	<p>Package Code C1: DFN3*3-8L</p> <p>Date Code XYMXXXXX</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.

Rating	Unit
30	V
±20	V
-55 to 175	°C
-55 to 175	°C
55	A
220	A
55	A
38.8	A
23	W

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

Symbol	Parameter	Test Conditions	HYG032N03LR1			Unit
			Min	Typ.	Max	
Dynamic Characteristics						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, Frequency=1.0MHz	-	2	-	Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =25V, Frequency=1.0MHz	-	2872	-	pF
C _{oss}	Output Capacitance		-	332	-	
C _{rss}	Reverse Transfer Capacitance		-	277	-	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _G =4 I _{DS} =20A, V _{GS} =10V	-	11	-	ns
T _r	Turn-on Rise Time		-	50	-	
t _{d(OFF)}	Turn-off Delay Time		-	52	-	
T _f	Turn-off Fall Time		-	57	-	
Gate Charge Characteristics						
Q _g (10V)	Total Gate Charge			61		
Q _g (4.5V)	Total Gate Charge	V _{DS} =24V, V _{GS} =10V, I _D =20A	-	32	-	nC

Typical Operating Characteristics

Figure 1: Power Dissipation

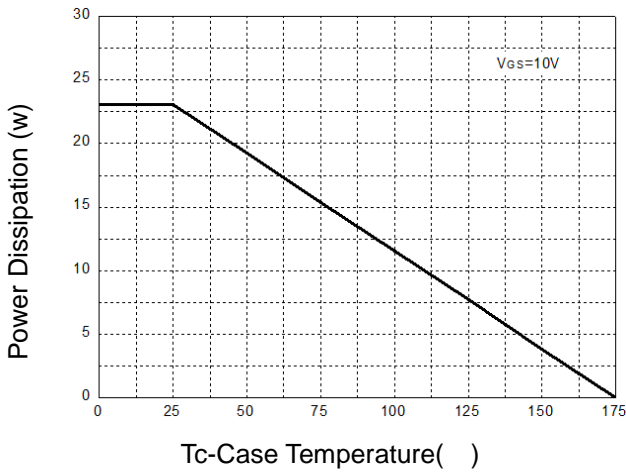


Figure 2: Drain Current

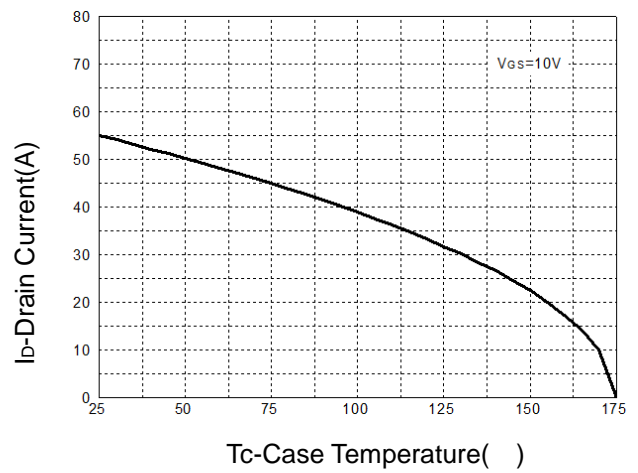


Figure 3: Safe Operation Area

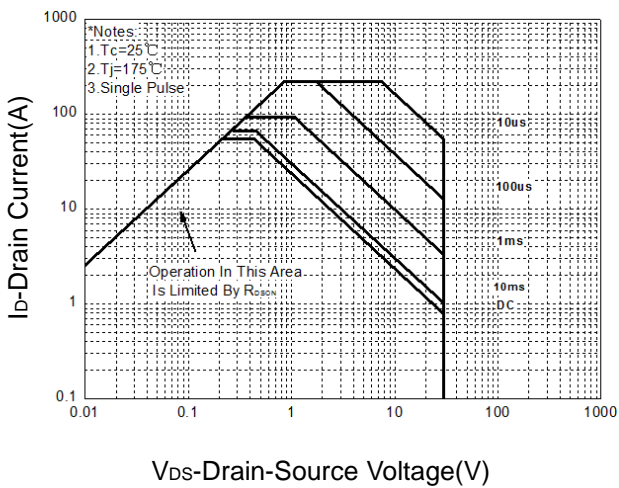


Figure 4: Thermal Transient Impedance

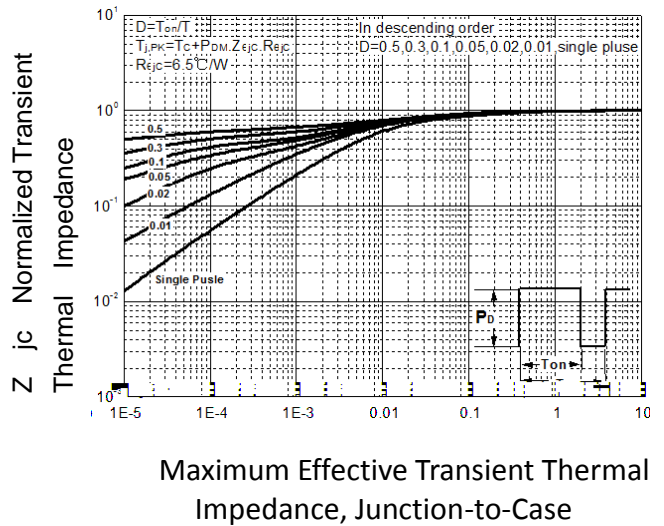


Figure 5: Output Characteristics

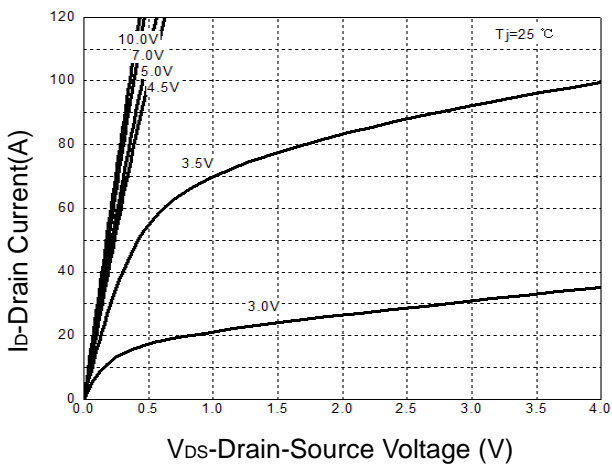
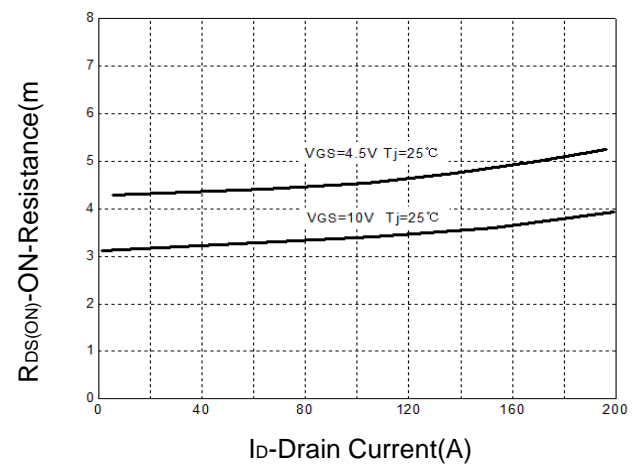
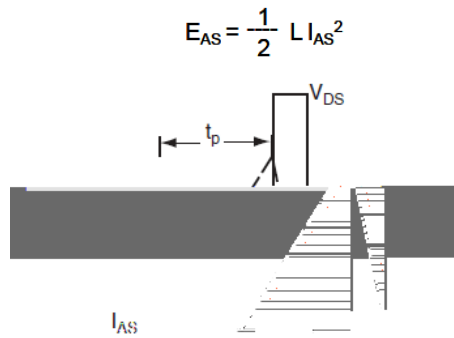
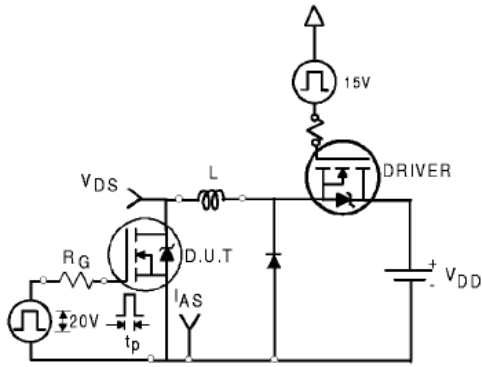


Figure 6: Drain-Source On Resistance

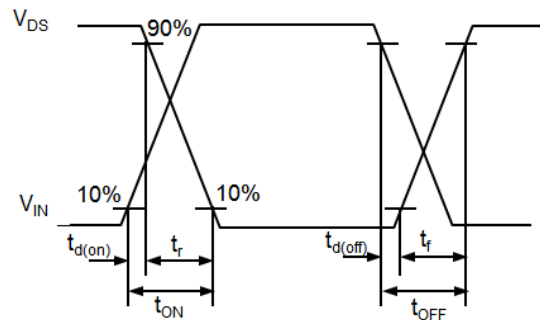
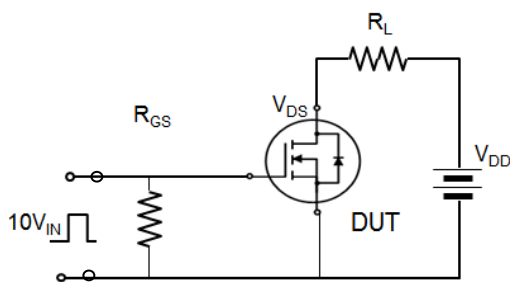


HYG032N03LR1C1

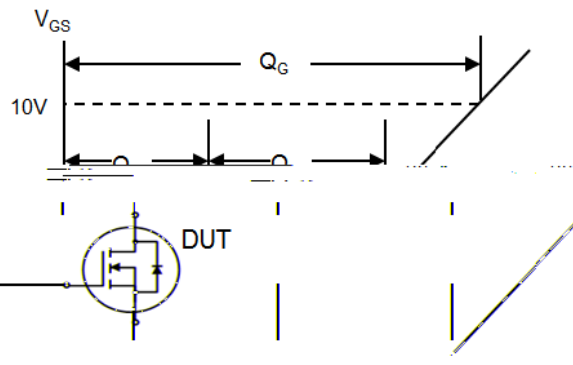
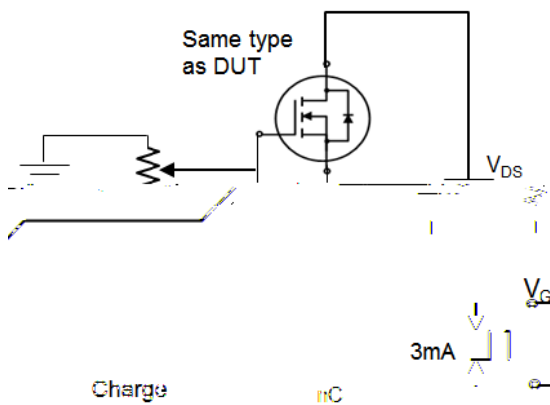
Avalanche Test Circuit



Switching Time Test Circuit



Gate Charge Test Circuit

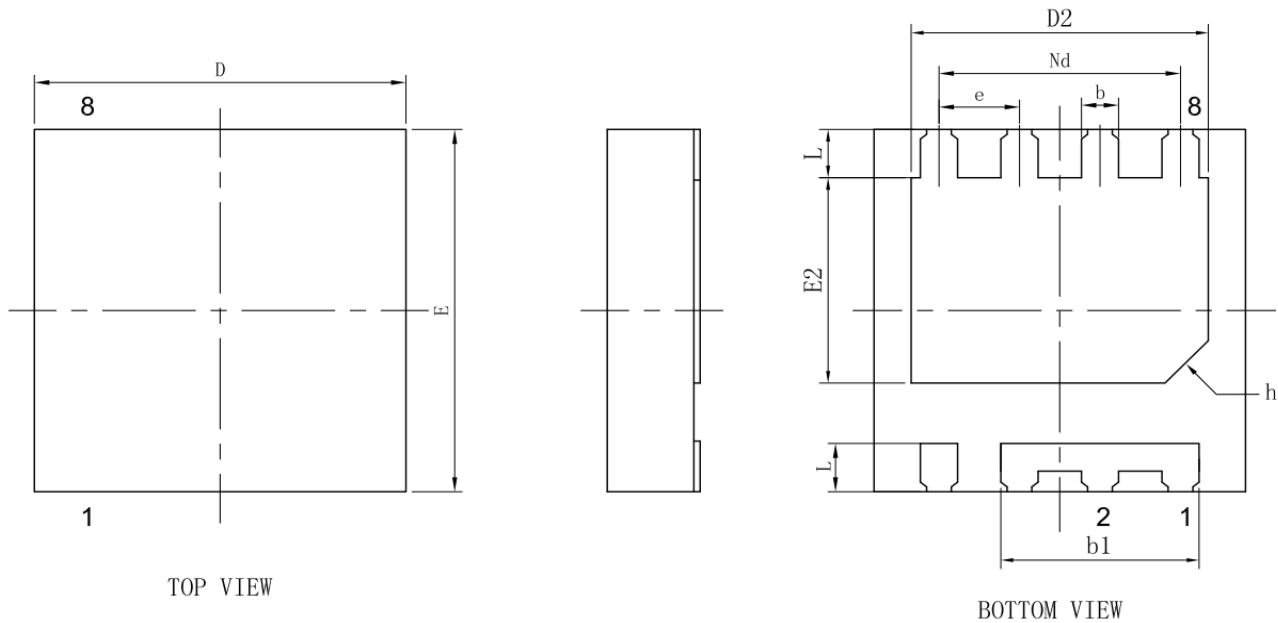


Device Per Unit

Package Type	Unit	Quantity
DFN3*3-8L	Reel	3000

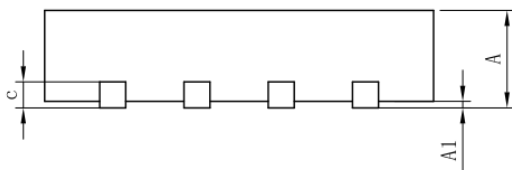
Package Information

DFN3*3-8L



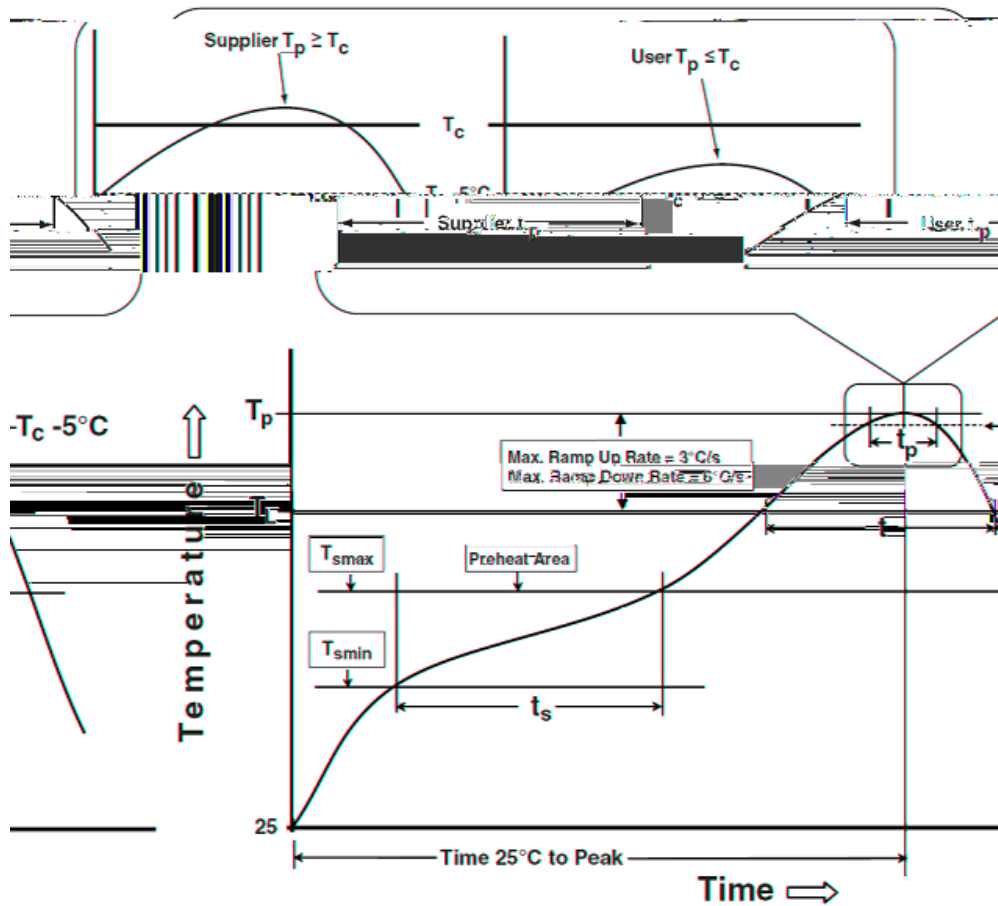
SYMBOL	MILLIMETER		
	MIN	NOM	MAX

TOP VIEW



N

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

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

Package Thickness	Volume mm <350	Volume mm 350-2000	Volume mm 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	168/500/1000 Hrs, Bias @ 150°C
HTGB	JESD-22, A108	168 /500/1000 Hrs, Vgs100% @ 150°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

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