

N-Channel Enhancement Mode MOSFET

Feature

- 80V/200A
 $R_{DS(ON)} = 3.1m$ (typ.) @ $V_{GS} = 10V$
- 100% Avalanche Tested
- Reliable and Rugged
- Halogen- Free and Green Devices Available
(RoHS Compliant)

Pin Description

G D S

Applications

- Power Switching application
- Uninterruptible Power Supply

Ordering and Marking Information

W HY4008 XYMXXXXXX	Package Code W:TO-247A-3L Date Code XYMXXXXXX
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Note: HUAYI lead-free products 10(r)en-US 2018 April 10, 2018

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (Tc=25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		80	V
V _{GSS}	Gate-Source Voltage		±20	V
T _J	Maximum Junction Temperature		175	°C
T _{STG}	Storage Temperature Range		-55 to 175	°C
I _S	Source Current-Continuous(Body Diode)	Tc=25°C	200	A
Mounted on Large Heat Sink				
I _{DM}	Pulsed Drain Current *	Tc=25°C	690	A
I _D	Continuous Drain Current	Tc=25°C	200	A
		Tc=100°C	141.4	A
P _D	Maximum Power Dissipation	Tc=25°C	375	W
		Tc=100°C	187.5	W
R _{θJC}	Thermal Resistance-Junction to Case		0.4	°C/W
R _{θJA}	Thermal Resistance-Junction to Ambient **		40	°C/W
E _{AS}	SinglePulsed-Avalanche Energy ***	L=0.3mH	998	mJ

Note: * Repetitive rating pulse width limited by max.junction temperature.

** Surface Mounted on FR4 Board.

*** Limited by T_{Jmax}, starting T_J=25°C, L = 0.3mH, V_D= 64V, V_{GS} =10V.

Electrical Characteristics(Tc =25°C Unless Otherwise Noted) 5501 reETQ1 0 0 1A1 0 0 1 301.3/2 -

Symbol	Parameter	Test Conditions	HY4008			Unit
			Min	Typ.	Max	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage					

HY4008NA2W

Typical Operating Characteristics

Figure 1: Power Dissipation

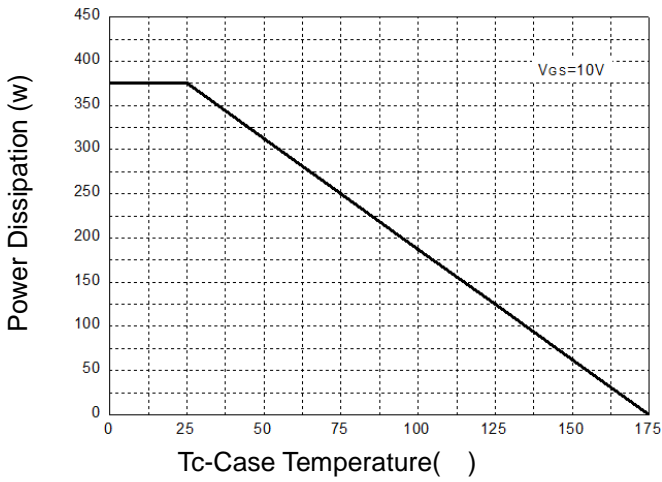


Figure 2: Drain Current

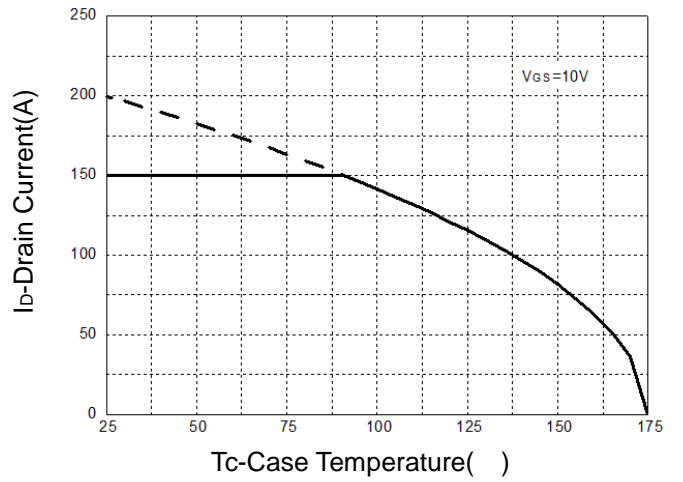


Figure 3: Safe Operation Area

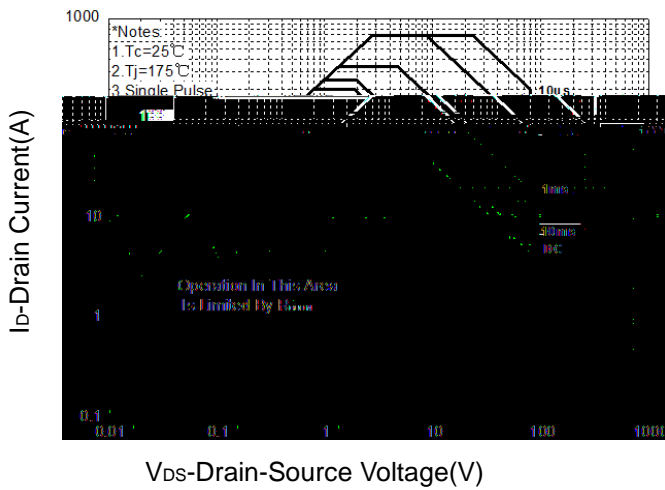


Figure 4: Thermal Transient Impedance

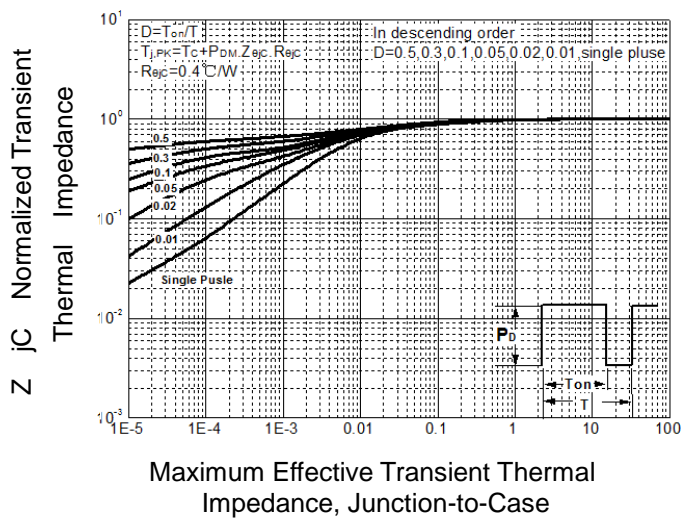


Figure 5: Output Characteristics

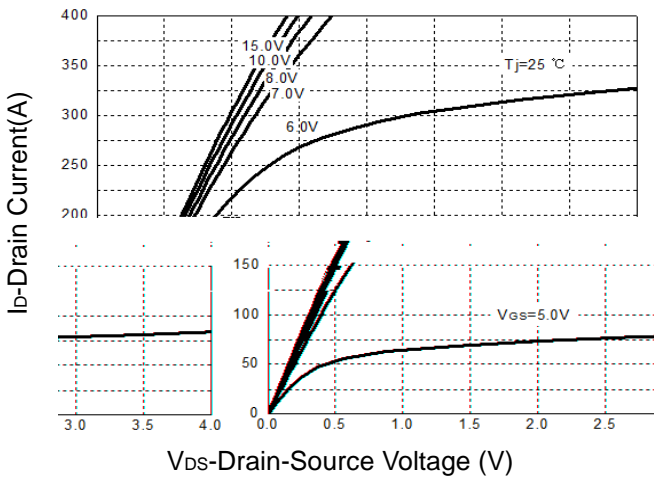
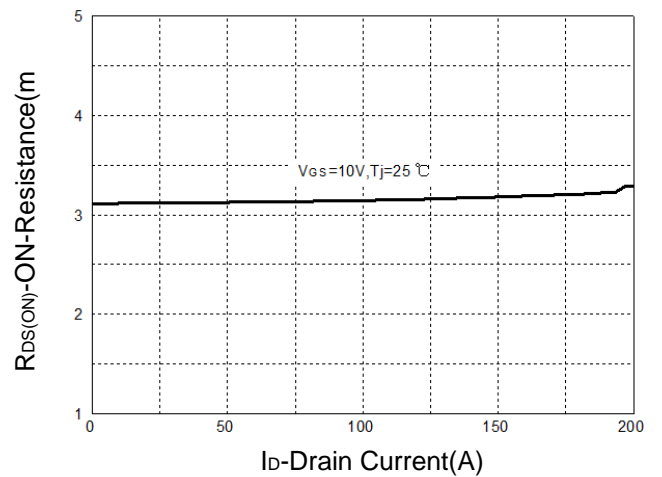


Figure 6: Drain-Source On Resistance



Typical Operating Characteristics(Cont.)

Figure 9: On-Resistance vs. Temperature

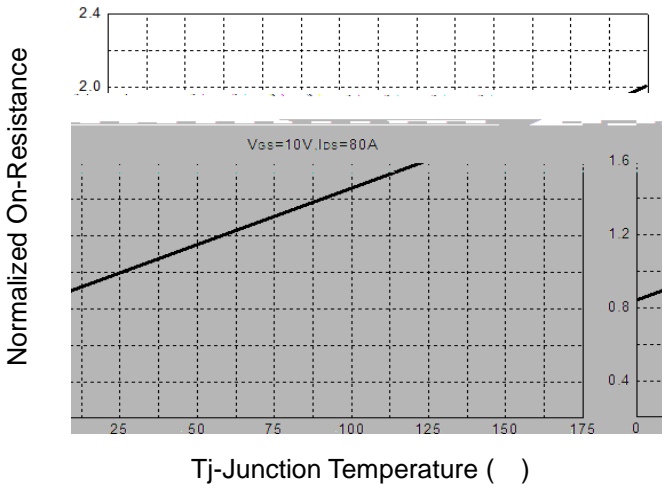


Figure 10: Source-Drain Diode Forward

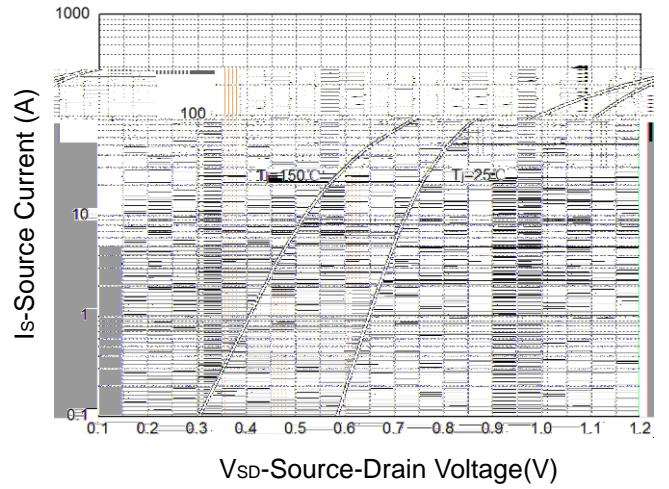


Figure 11: Capacitance Characteristics

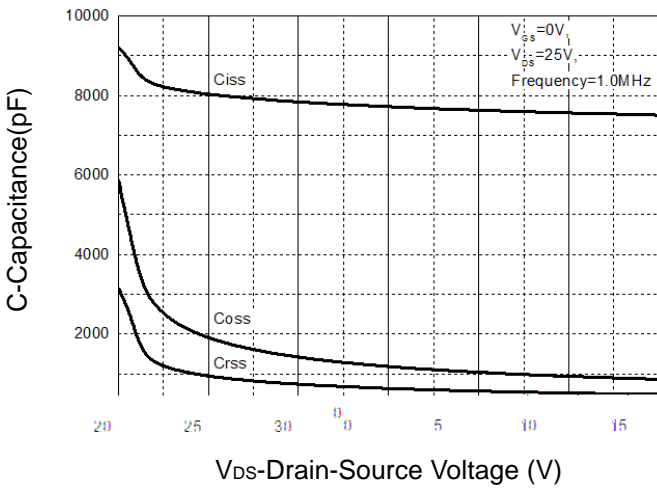
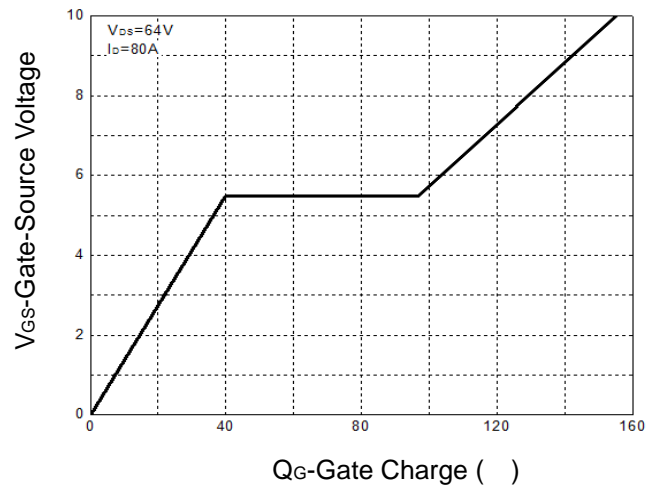
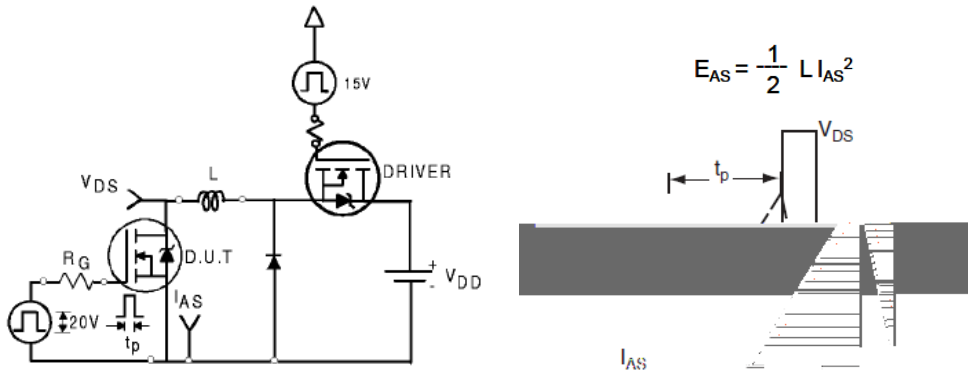


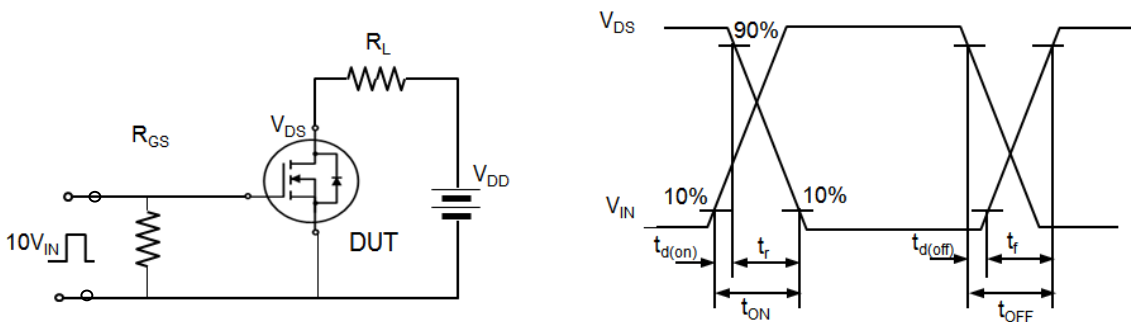
Figure 12: Gate Charge Characteristics



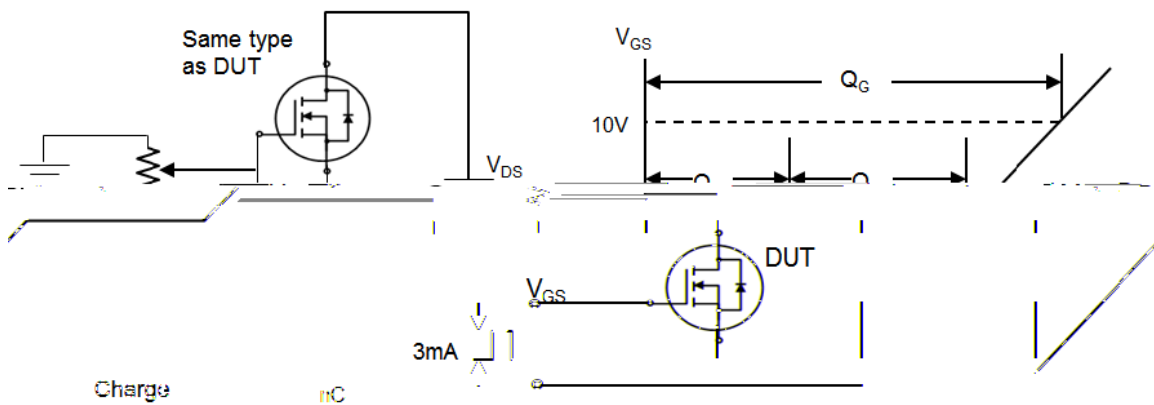
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Gate Charge Test Circuit and Waveforms



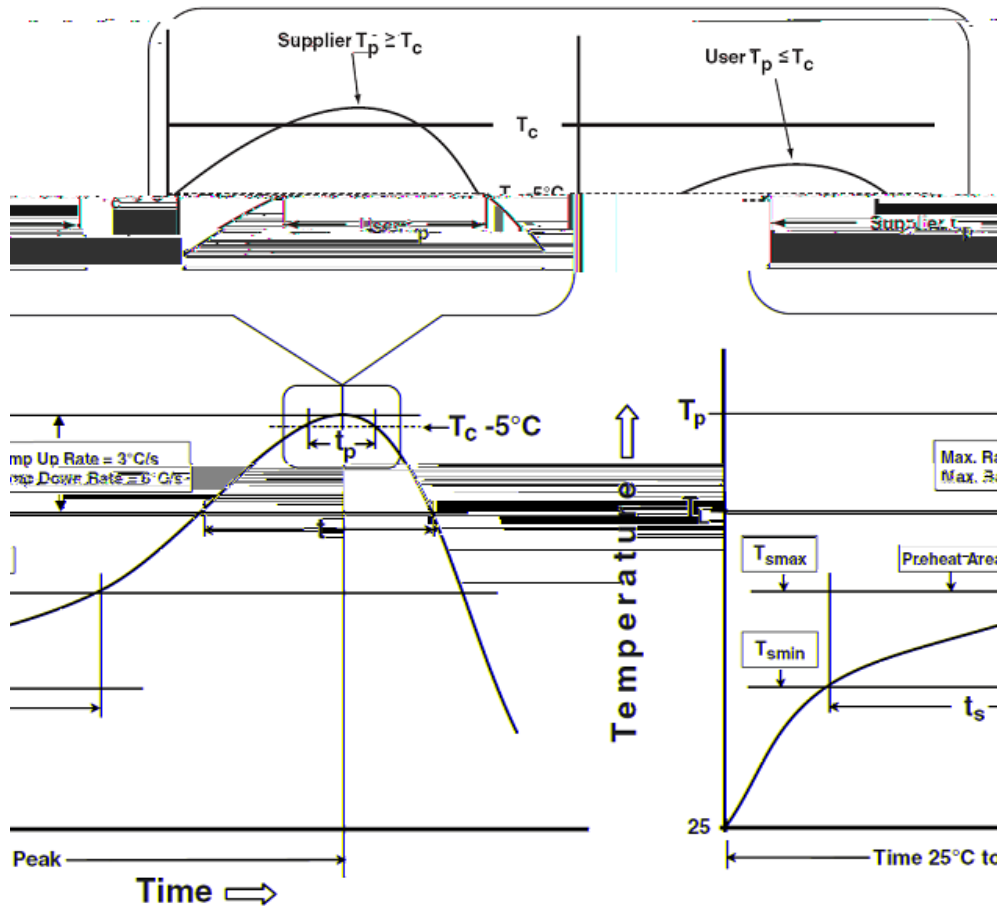
Device Per Unit

Package Type	Unit	Quantity
TO-247A-3L	Tube	30

Package Information

TO-247A-

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.

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