



## Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
<b>Common Ratings</b> (Tc=25°C Unless Otherwise Noted)				
V <sub>DSS</sub>	Drain-Source Voltage		80	V
V <sub>GSS</sub>	Gate-Source Voltage		±20	V
T <sub>J</sub>	Maximum Junction Temperature		175	°C
T <sub>STG</sub>	Storage Temperature Range		-55 to 175	°C
I <sub>S</sub>	Source Current-Continuous(Body Diode)	Tc=25°C	200	A
<b>Mounted on Large Heat Sink</b>				
I <sub>DM</sub>	Pulsed Drain Current *	Tc=25°C	690	A
I <sub>D</sub>	Continuous Drain Current	Tc=25°C	200	A
		Tc=100°C	141.4	A
P <sub>D</sub>	Maximum Power Dissipation	Tc=25°C	375	W
		Tc=100°C	187.5	W
R <sub>θJC</sub>	Thermal Resistance-Junction to Case		0.4	°C/W
R <sub>θJA</sub>	Thermal Resistance-Junction to Ambient **		40	°C/W
E <sub>AS</sub>	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<sub>Jmax</sub>, starting T<sub>J</sub>=25°C, L = 0.3mH, V<sub>D</sub>= 64V, V<sub>GS</sub> =10V.

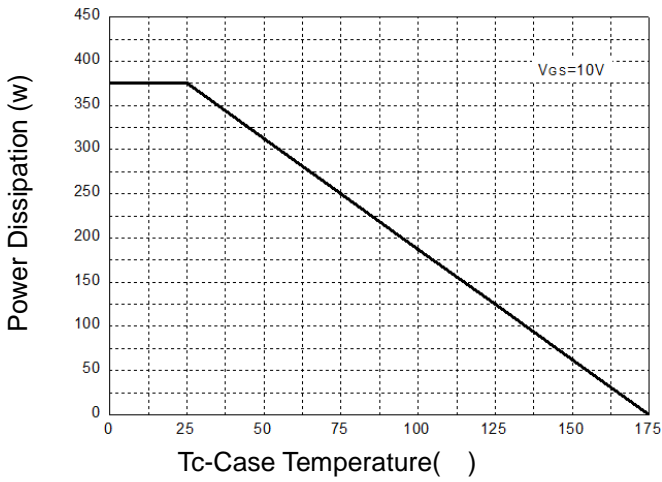
## Electrical Characteristics(Tc =25°C Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	HY4008			Unit
			Min	Typ.	Max	
<b>Static Characteristics</b>						
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V,I				

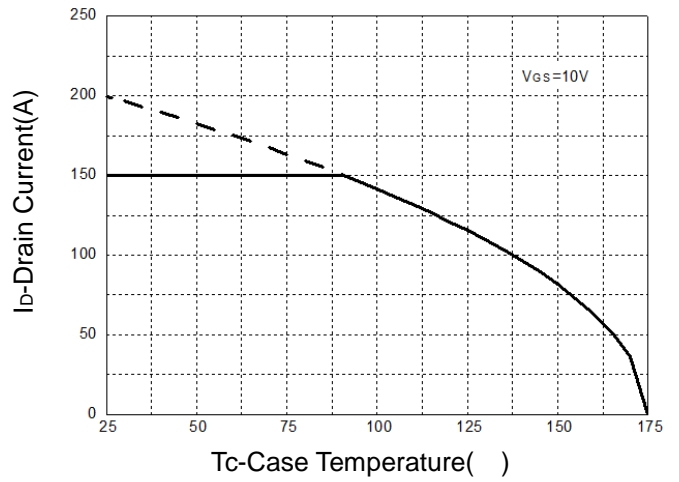
**HY4008NA2W**

**Typical Operating Characteristics**

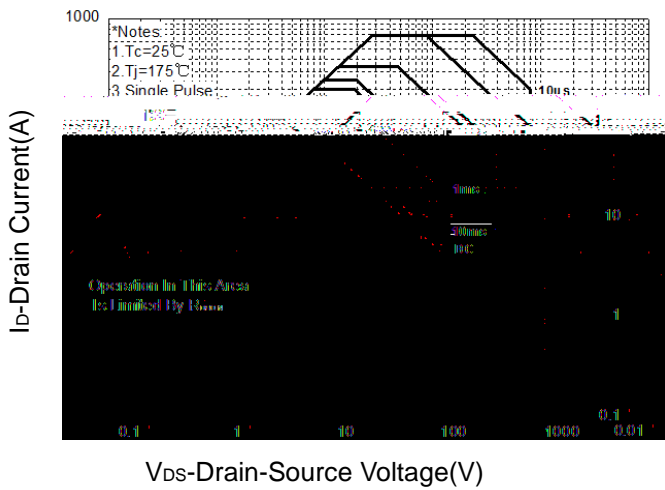
**Figure 1: Power Dissipation**



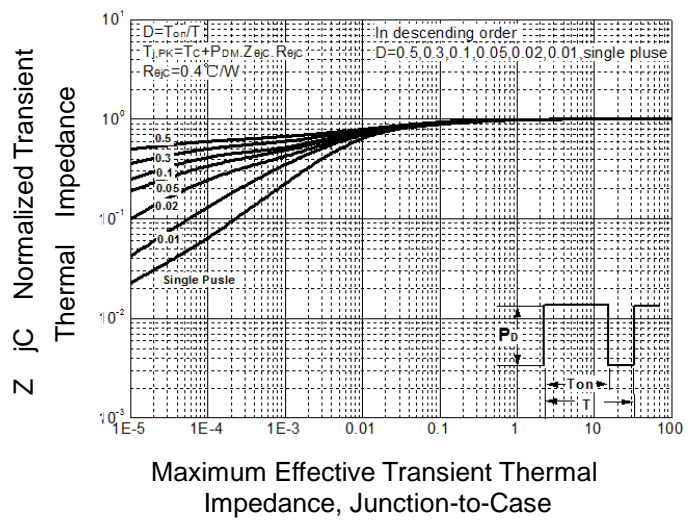
**Figure 2: Drain Current**



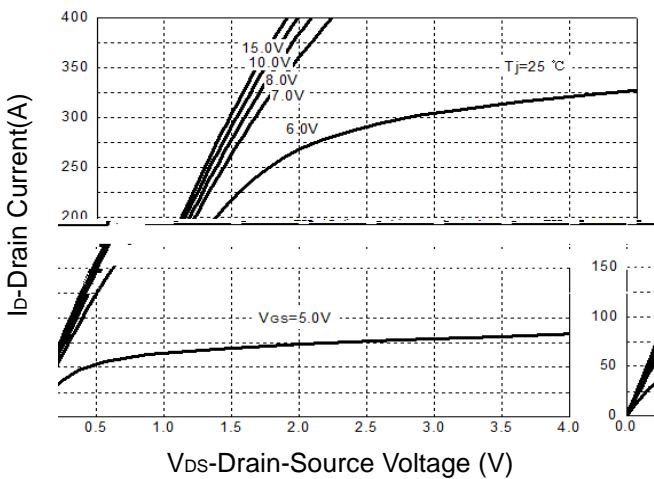
**Figure 3: Safe Operation Area**



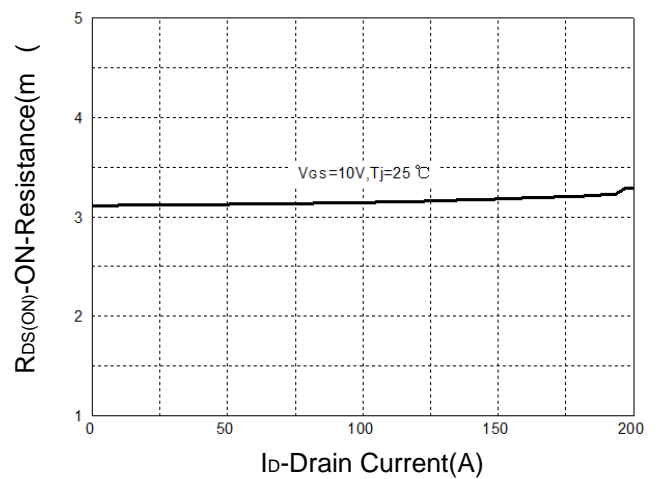
**Figure 4: Thermal Transient Impedance**



**Figure 5: Output Characteristics**

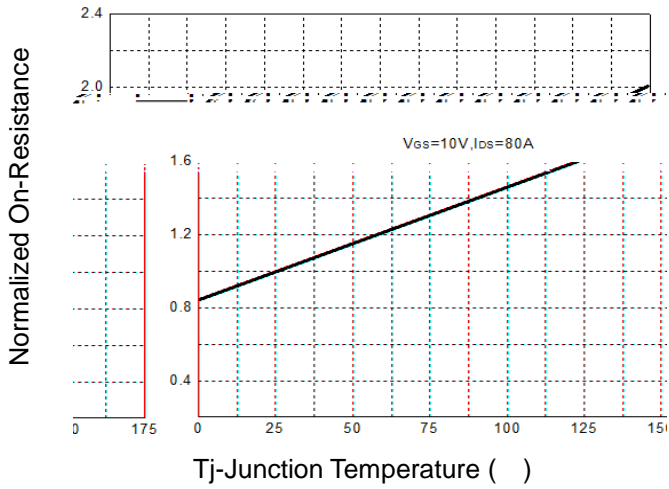


**Figure 6: Drain-Source On Resistance**

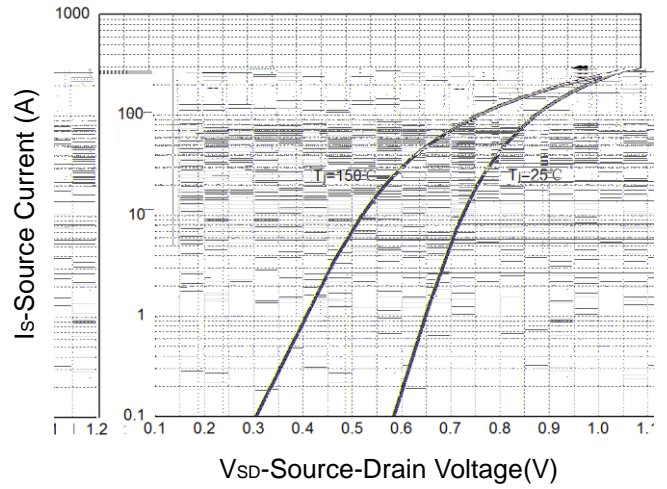


## Typical Operating Characteristics(Cont.)

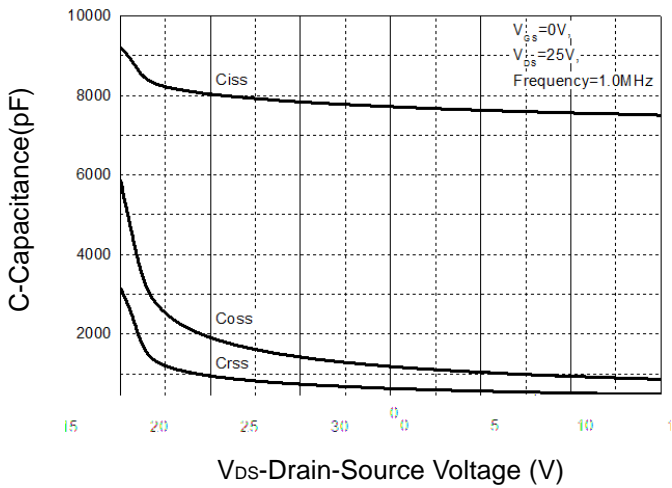
**Figure 9: On-Resistance vs. Temperature**



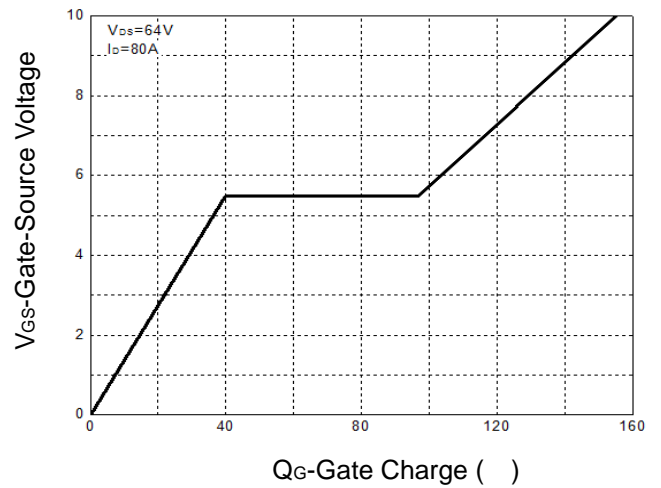
**Figure 10: Source-Drain Diode Forward**



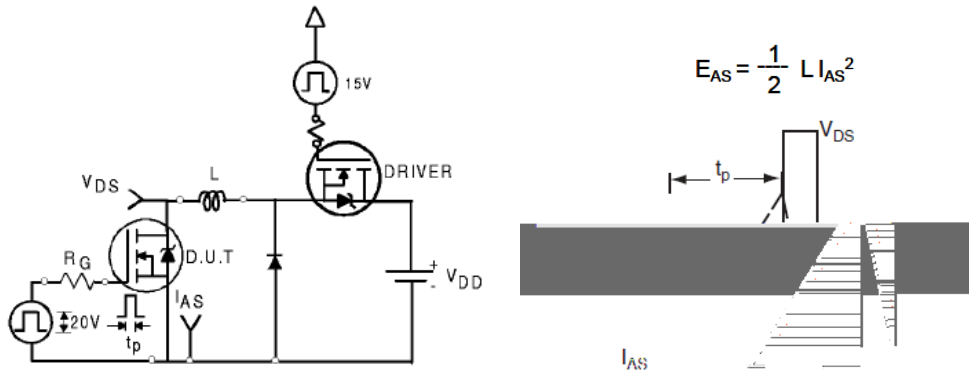
**Figure 11: Capacitance Characteristics**



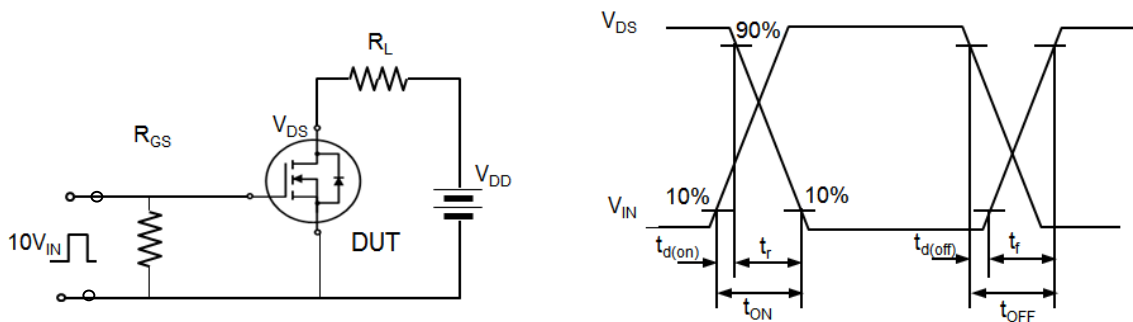
**Figure 12: Gate Charge Characteristics**



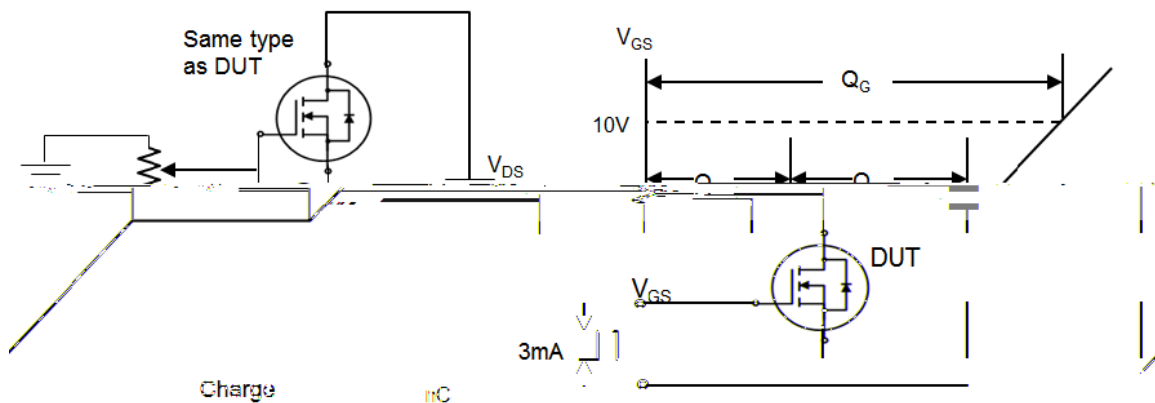
### Avalanche Test Circuit and Waveforms



### Switching Time Test Circuit and Waveforms



### Gate Charge Test Circuit and Waveforms



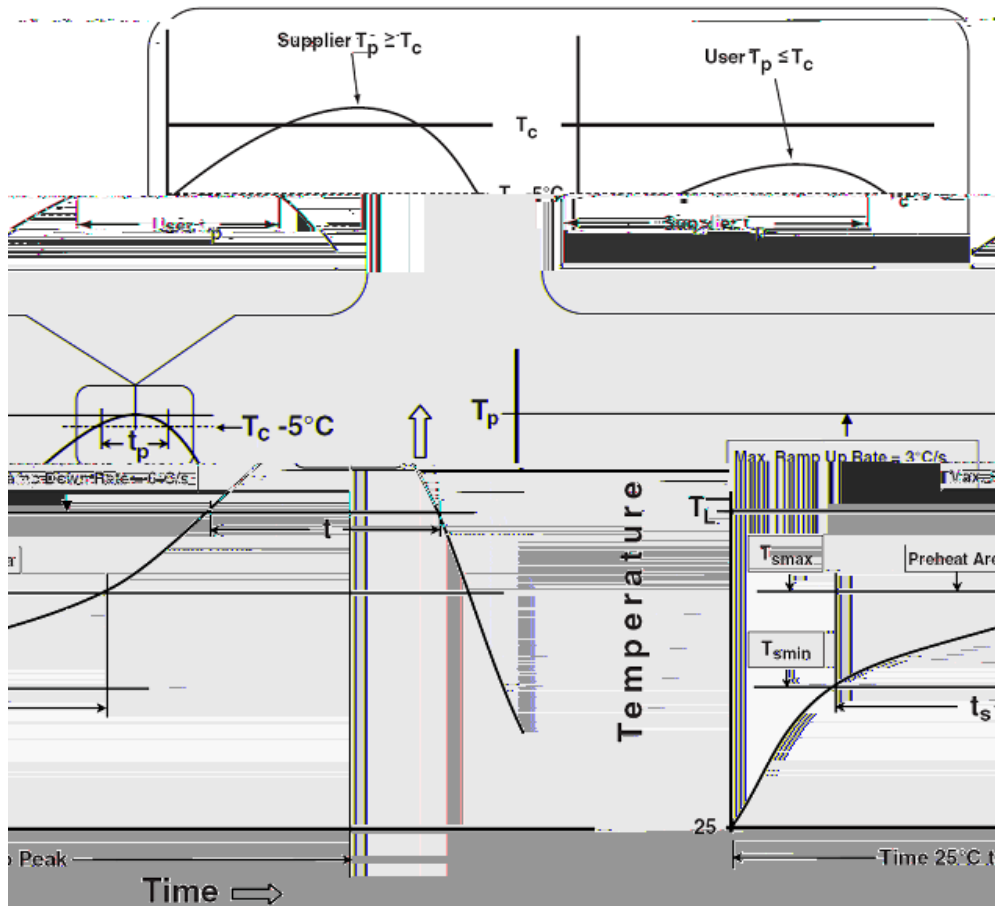
## Device Per Unit

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
<b>Preheat &amp; Soak</b>		
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.



**HY4008NA2W**