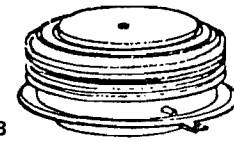


5.2 Condensed Electrical And Thermal Characteristics And Ratings

INVERTER SCRs 1600 TO 2000 AMPERES

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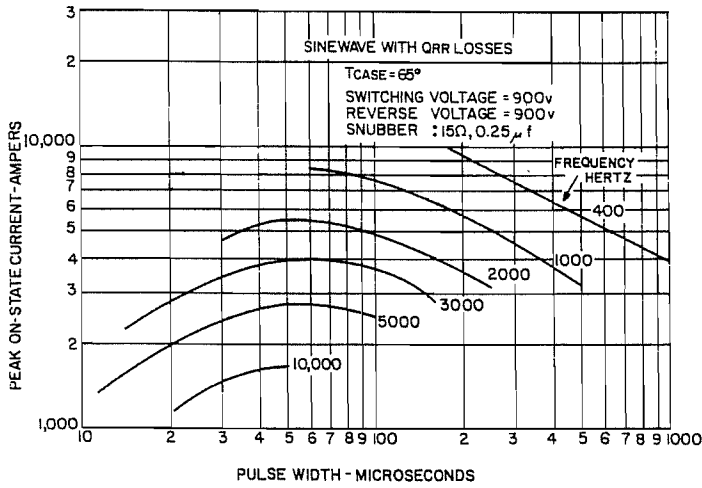


GE TYPE		C457	C458				
CONSTRUCTION		AMPLIFYING GATE	AMPLIFYING GATE				
SPECIFICATIONS							
Voltage Range		500-1400	500-1400				
Forward Conduction							
$I_{(RMS)}$	Max. forward conduction sinusoidal: @ $T_C = 65^\circ\text{C}$, 50% duty (A)	—	—				
	@ 60 Hz.	2000	1600				
	@ 600 Hz.	1800	1600				
	@ 1000 Hz.	1600	1600				
	@ 1200 Hz.	1500	1600				
	@ 2500 Hz.	750	1400				
	@ 5000 Hz.	—	1250				
I_{TSM}	Max. peak one-cycle, non-repetitive surge current (A)	50 Hz.	18,000	15,000			
		60 Hz.	18,700	16,000			
I^2t	Max. I^2t for fusing 1.5 msec (A^2sec)	625,000	420,000				
$R_{\theta JC}$	Max. thermal impedance ($^\circ\text{C}/\text{w}$)	.023	.023				
t_q	Turn-off time @ 0.8 V_{DRM} and T_J $V_R \geq 50\text{V}$ (μsec) @ 20V/ μsec reapplied	—	—				
		@ 100V/ μsec reapplied	—	—			
		@ 200V/ μsec reapplied	40	25			
		@ 400V/ μsec reapplied	—	—			
Q_{RR}	Max. reverse recovered charge (μc), $T_J = 25^\circ\text{C}$	300	65				
di/dt	Critical rate-of-rise of on-state current ($\text{A}/\mu\text{s}$)	800	800				
T_J	Junction operating temperature range ($^\circ\text{C}$)	-40 to +125 $^\circ$	-40 to +125 $^\circ$				
dV/dt	Min. critical rate-of-rise of off-state voltage, exponential to 0.8 V_{DRM} @ Max. T_J ($\text{V}/\mu\text{s}$)	400	400				
I_{GT}	Max. required gate current to trigger (mA) @ -40 $^\circ\text{C}$ @ +25 $^\circ\text{C}$	400	400				
		200	200				
V_{GT}	Max. required voltage to trigger (V) from -40 $^\circ\text{C}$ to +125 $^\circ\text{C}$	5	5				
V_{TM}	Max. forward voltage ¹ drop for the current range:	$I_{MIN}(A)$	100	100			
		$I_{MAX}(A)$	10000	10000			
		A	1.5	.29			
		B	-.2	.14			
		C	.00002	.0003			
$R_{\theta JC}$	Transient thermal ² resistance for time:	$T_{MIN}(S)$.001	.001			
		$T_{MAX}(S)$.01	.01			
		F	.055	.055			
		G	.63	.63			
Package Outline No.		308	308				
Max. Mounting Force	Lbs	6000	6000				
	KN	26.7	26.7				
Expanded Electrical Characterization, see page:		229	230				

1. Voltage Drop Model: $V_F = A + B \cdot L_N(I) + C \cdot I + D\sqrt{I}$.

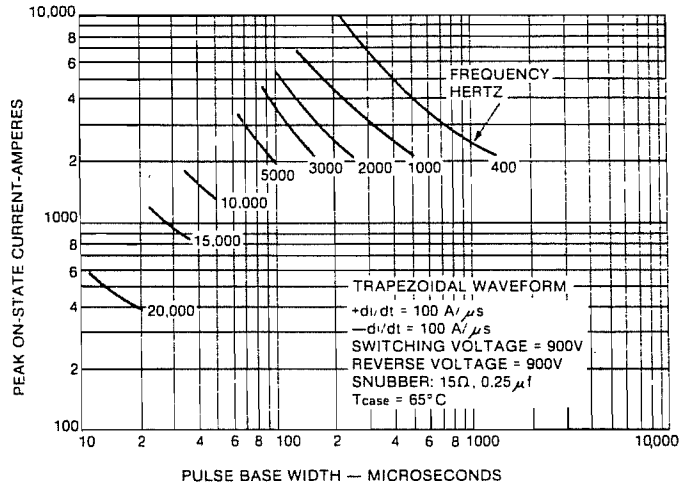
2. Transient Resistance Model: $R_{\theta JC} = F \cdot t^G$

SINUSOIDAL CURRENT WAVEFORMS

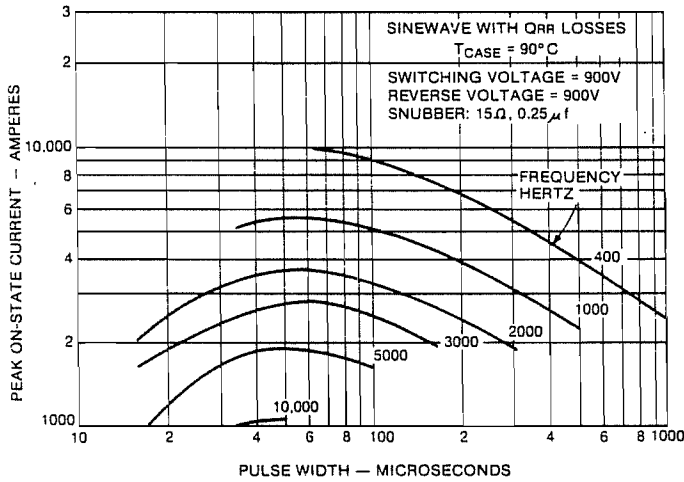


1. MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT VS. PULSE WIDTH ($T_c = 65^\circ\text{C}$)

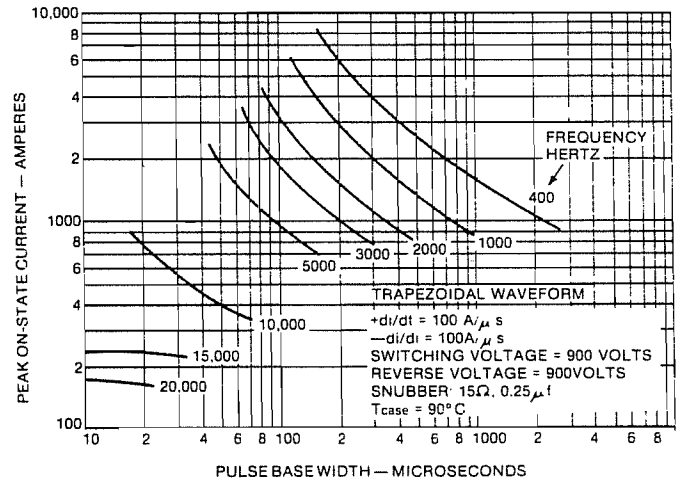
TRAPEZOIDAL CURRENT WAVEFORMS



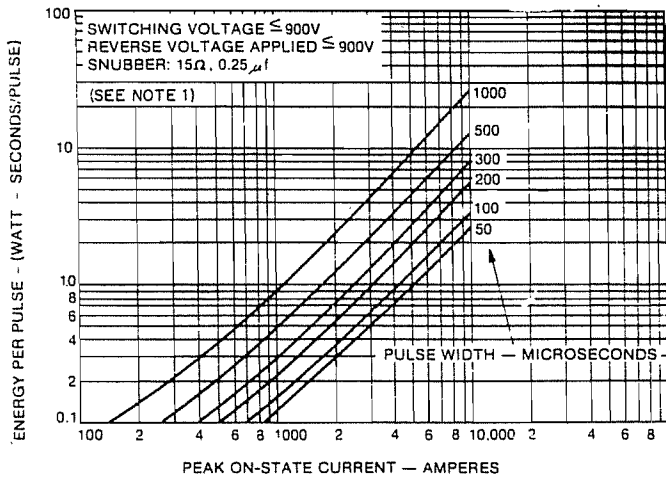
4. MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT VS. PULSE WIDTH ($T_c = 65^\circ\text{C}$)



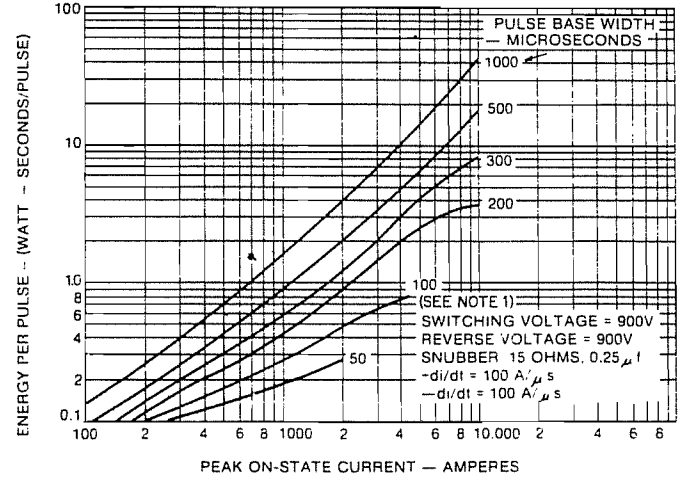
2. MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT VS. PULSE WIDTH ($T_c = 90^\circ\text{C}$)



5. MAXIMUM ALLOWABLE PEAK ON-STATE CURRENT VS. PULSE WIDTH ($T_c = 90^\circ\text{C}$)



3. ENERGY PER PULSE FOR SINUSOIDAL PULSES



6. ENERGY PER PULSE FOR TRAPEZOIDAL PULSES