New Jersey Semi-Conductor Products, Inc.

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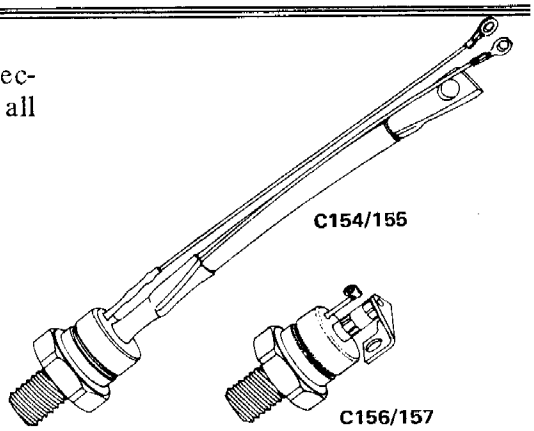
C154, C156
C155, C157

HIGH SPEED
Silicon Controlled Rectifier
600 VOLTS 110A RMS

The C154, C155, C156 and C157 Silicon Controlled Rectifiers are designed for power switching at high frequencies. These are all diffused Pic-Pac devices employing the field proven amplifying gate.



FEATURES:

- High di/dt ratings.
- High dv/dt capability with selections available.
- Excellent surge and I^2t ratings providing easy fusing.
- Guaranteed maximum turn-off time with selections available.
- Rugged hermetic package with long creepage path.

MAXIMUM ALLOWABLE RATINGS

TYPES	REPETITIVE PEAK OFF-STATE VOLTAGE, V_{DRM}[1] T_J = -40°C to +125°C	REPETITIVE PEAK REVERSE VOLTAGE, V_{RRM}[1] T_J = -40°C to +125°C	NON-REPETITIVE PEAK REVERSE VOLTAGE, V_{RSM}[1] T_J = +125°C
C154A, C155A, C156A, C157A	100 Volts	100 Volts	160 Volts
C154B, C155B, C156B, C157B	200	200	260
C154C, C155C, C156C, C157C	300	300	380
C154D, C155D, C156D, C157D	400	400	480
C154E, C155E, C156E, C157E	500	500	600
C154M, C155M, C156M, C157M	600	600	720

[1] Half sinewave waveform, 10 ms max. pulse width.

RMS On-State Current, $I_{T(RMS)}$	110 Amperes
Peak One Cycle Surge (Non-Repetitive) On-State Current, I_{TSM} (60 Hz)	1800 Amperes
Peak One Cycle Surge (Non-Repetitive) On-State Current, I_{TSM} (50 Hz)	1700 Amperes
Critical Rate-of-Rise of On-State Current, Non-Repetitive	800 A/μs †
Critical Rate-of-Rise of On-State Current, Repetitive	500 A/μs †
I^2t (for fusing) for times ≥ 1.5 milliseconds	9,500 (RMS Ampere)^2 Seconds
I^2t (for fusing) for times ≥ 8.3 milliseconds	13,500 (RMS Ampere)^2 Seconds
Average Gate Power Dissipation, $P_{G(AV)}$	2 Watts
Storage Temperature, T_{stg}	-40°C to +150°C
Operating Temperature, T_J	-40°C to +125°C
Stud Torque	150 Lb.-In. (Max.), 125 Lb.-In. (Min.) 17 N-m (Max.), 14 N-m (Min.)

Quality Semi-Conductors

CHARACTERISTICS

TEST	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
Repetitive Peak Reverse and Off-State Current	I_{RRM} and I_{DRM}	–	5	12	mA	T_J = +25°C V = V_{DRM} = V_{RRM}
Repetitive Peak Reverse and Off-State Current	I_{RRM} and I_{DRM}	–	12	17	mA	T_J = 125°C V = V_{DRM} = V_{RRM}
Thermal Resistance	$R_{\theta JC}$	–	.2	.3	°C/Watt	Junction-to-Case
Critical Rate-of-Rise of Off-State Voltage (Higher values may cause device switching)	dv/dt				V/μsec	T_J = +125°C, Gate Open. V_{DRM} = Rated, Linear or Exponential Rising Waveform Exponential dv/dt = $\frac{V_{DRM}}{\tau}$ (.632)
C154/C156		200	500	–		
C155/C157		100	300	–		
For higher minimum dv/dt selections – consult factory.						
Holding Current	I_H	–	100	–	mAdc	T_C = +25°C, Anode Supply = 24 Vdc. Initial On-State Current = 2 Amps.
DC Gate Trigger Current	I_{GT}	–	50	150	mAdc	T_C = +25°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	100	200		T_C = -40°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	30	120		T_C = +125°C, V_D = 6 Vdc, R_L = 3 Ohms
DC Trigger Voltage	V_{GT}	–	3.0	5.0	Vdc	T_C = -40°C to 0°C, V_D = 6 Vdc, R_L = 3 Ohms
		–	1.25	3.0		T_C = 0°C to +125°C, V_D = 6 Vdc, R_L = 3 Ohms
		0.15	–	–		T_C = +125°C, V_{DRM}, R_L = 1000 Ohms
Peak On-State Voltage	V_{TM}	–	2.2	3.0	Volts	T_C = +25°C, I_{TM} = 500 Amps. Peak Duty Cycle ≤ .01%
Turn-On Delay Time	t_d	–	1	–	μsec	T_C = +25°C, I_T = 50 Adc, V_{DRM}, Gate Supply: 20 Volt Open Circuit, 20 Ohms, 0.1 μsec max. rise time.
Conventional Circuit Commutated Turn-Off Time (with Reverse Voltage)	t_q				μsec	(1) T_C = +125°C (2) I_{TM} = 150 Amps. (3) V_R = 50 Volts Min. (4) V_{DRM} (Reapplied) (5) Rate-of-Rise of Reapplied Off-State Voltage = 20 V/μsec (linear) (6) Commutation di/dt = 5 Amps/μsec. (7) Duty Cycle ≤ .01% (8) Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms
C154/C156		–	8	10		
C155/C157		–	12	20		
Conventional Circuit Commutated Turn-Off Time (with Feedback) Diode)	$t_{q(diode)}$				μsec	(1) T_C = +125°C (2) I_{TM} = 150 Amps. (3) V_R = 1 Volt (4) V_{DRM} (Reapplied) (5) Rate-of-Rise of Reapplied Off-State Voltage = 20 V/μsec (6) Commutation di/dt = 5 Amps/μsec (7) Duty Cycle ≤ .01% (8) Gate Bias During Turn-Off Interval = 0 Volts, 100 Ohms
C154/C156		–	12	†		
C155/C157		–	15	†		

†Consult factory for specified maximum turn-off time.