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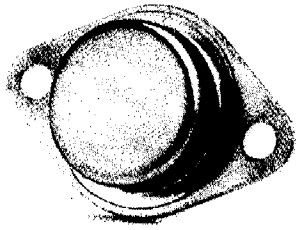
PMD 20K SERIES

150 WATT (14 AMP CONTINUOUS, 20 AMP PEAK)



FEATURES

- Electrical specifications guaranteed for operating junction temperature range of 0 - 150°C
- Guaranteed and 100% tested for I_{SB} (Secondary Breakdown Current) insuring maximum performance at high energy levels
- Built-in speed up diode for fast turn-off with negative base drive
- Low thermal resistance for more useable power and lower operating temperatures
- Hermetically sealed

DESCRIPTION

The PMD 20K Series of devices are three-terminal NPN Switching Darlington Power Transistors. These devices are monolithic epitaxial base structures with built-in base to emitter shunt resistors. They have been designed to switch at frequencies up to 30kHz. The devices are CVD glass passivated to increase reliability and provide reduced high-temperature reverse leakage current. Internal diode protection (D1) of the Darlington configuration is built into the structure to limit the device power dissipation during negative overshoot. Diode D2 is built-in to reduce device turn-off time when negative base drive is used.

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MAXIMUM	UNITS
Collector Emitter Voltage PMD 20K120 PMD 20K150 PMD 20K200	V_{CEO}	 120 150 200	Vdc
Collector Base Voltage PMD 20K120 PMD 20K150 PMD 20K200	V_{CBO}	 120 150 200	Vdc
Emitter Base Voltage	V_{EBO}	2	Vdc
Collector Current Continuous Peak	I_C	 14 20	Adc
Base Current	I_B	0.5	Adc
Thermal Resistance	θ_{JC}	1.0	°C/Watt
Total Internal Power Dissipation @ T_C = 0°C[1]	P_D	150	Watts
Operating Junction and Storage Temperature	T_J T_{STG}	−65 to +150 −65 to +200	°C

[1] For operation above T_C = 0°C, derate @ 1 W/°C.

DEVICE SELECTION GUIDE

DEVICE	VOLTAGE RATING
PMD 20K120	120V
PMD 20K150	150V
PMD 20K200	200V

Excellent thermal resistance junction to case (θ_{JC}) provides for more useable power at lower operating temperatures. This, coupled with 100% I_{SB} testing, insures optimum performance and durability in power applications such as switching regulators and inverters. These Darlington devices are hermetically sealed steel TO-3 packages providing high reliability and low thermal resistance.

PMD 20K SERIES

ELECTRICAL CHARACTERISTICS

All parameters are guaranteed at T_J = 0 to 150°C, unless otherwise specified.

Parameter	Symbol	Test Conditions	Minimum	Maximum	Units
ON CHARACTERISTICS					
Collector Emitter Saturation Voltage[1]	$V_{CE(sat)}$	I_C = 10 Adc; I_B = 50 mAdc		1.7[2] 1.8	Vdc
Base Emitter Turn-on Voltage[1]	$V_{BE(on)}$	I_C = 10 Adc; V_{CE} = 3 Vdc		2.6[2] 2.8	Vdc
Base Emitter Saturation[1]	$V_{BE(sat)}$	I_C = 10 Adc; I_B = 50 mAdc		2.6[2] 2.8	Vdc
DC Current Gain[1]	h_{FE}	I_C = 10 Adc; V_{CE} = 3 Vdc	300		
Forward Bias Secondary Breakdown Current	$I_{s/b}$	V_{CE} = 26 Vdc; T_A = 25°C 1 sec non-repetitive pulse	5.8		Adc
Secondary Breakdown Energy	$E_{s/b}$	I_C = 8.43 Adc; L = 45μH T_A = 25°C	1.6		mJoules
OFF CHARACTERISTICS					
Collector Emitter Breakdown Voltage[1] (Base Open) PMD 20K120 PMD 20K150 PMD 20K200	$V_{(BR)CEO}$	I_{CE} = 100 mAdc; I_B = 0 T_J = 25°C	 120 150 200		Vdc
Collector Emitter Sustaining Voltage[1] PMD 20K120 PMD 20K150 PMD 20K200	$V_{(SUS)CER}$	I_{CE} = 100 mAdc; R_{BE} = 2.2kΩ	 120 150 200		Vdc
Emitter Base Leakage Current	I_{EBO}	V_{EB} = 0.9 Vdc; I_C = 0A		70	mAdc
Collector Emitter Leakage Current PMD 20K120 PMD 20K150 PMD 20K200	I_{CER}	 V_{CE} = 80 Vdc; R_{BE} = 2.2kΩ V_{CE} = 100 Vdc; R_{BE} = 2.2kΩ V_{CE} = 150 Vdc; R_{BE} = 2.2kΩ		 5.0 5.0 5.0	mAdc
Collector Emitter Leakage Current (Base Open)[2] PMD 20K120 PMD 20K150 PMD 20K200	I_{CEO}	 V_{CE} = 80 Vdc V_{CE} = 100 Vdc V_{CE} = 150 Vdc		 0.5 0.5 0.5	mAdc
DYNAMIC CHARACTERISTICS[2,3]					
Rise Time	t_r	I_C = 10 Adc; V_{CC} = 30V		0.3	μS
Turn-On Time	t_{on}	I_C = 10 Adc; V_{CC} = 30V		0.5	μS
Fall Time	t_f	I_C = 10 Adc; V_{CC} = 30V		0.8	μS
Turn-Off Time	t_{off}	I_C = 10 Adc; V_{CC} = 30V		1.0	μS

(1) Pulse tested with pulse width ≤ 300 μS and duty cycle ≤ 2.0%.
(2) T_J = 25°C.
(3) See AC test circuit.