



Powerex, Inc., 200 Hillis Street, Youngwood, Pennsylvania 15697-1800 (724) 925-7272

CM25MD1-24H

CI Module

Three Phase Converter + Three Phase Inverter

25 Amperes/1200 Volts

Absolute Maximum Ratings, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	CM25MD1-24H	Units
Power Device Junction Temperature	T_j	-40 to 150	$^\circ\text{C}$
Storage Temperature	T_{stg}	-40 to 125	$^\circ\text{C}$
Mounting Torque, M4 Mounting Screws	—	13	in-lb
Module Weight (Typical)	—	100	Grams
Isolation Voltage, AC 1 minute, 60Hz	V_{RMS}	2500	Volts

Converter Sector

Repetitive Peak Reverse Voltage	V_{RRM}	1600	Volts
Recommended AC Input Voltage	E_a	440	Volts
DC Output Current	I_o	25	Amperes
Surge (Non-repetitive) Forward Current	I_{FSM}	250	Amperes
I^2t for Fusing	I^2t	260	A^2s

IGBT Inverter Sector

Collector-Emitter Voltage (G-E Short)	V_{CES}	1200	Volts
Gate-Emitter Voltage (C-E Short)	V_{GES}	± 20	Volts
Collector Current	I_C	25	Amperes
Collector Current (Pulse)*	I_{CM}	50	Amperes
Emitter Current**	I_E	25	Amperes
Emitter Current** (Pulse)*	I_{EM}	50	Amperes
Maximum Collector Dissipation	P_C	104	Watts

Electrical and Mechanical Characteristics, $T_j = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Converter Sector						
Repetitive Reverse Current	I_{RRM}	$V_R = V_{RRM}, T_j = 150^\circ\text{C}$	—	—	8	mA
Forward Voltage Drop	V_{FM}	$I_F = 25\text{A}$	—	—	1.5	Volts
Thermal Resistance (Junction-to-Fin)	$R_{th(j-f)}$	Per Diode	—	—	1.7	$^\circ\text{C/W}$
IGBT Inverter Sector						
Collector Cutoff Current	I_{CES}	$V_{CE} = V_{CES}, V_{GE} = 0\text{V}$	—	—	1	mA
Gate-Emitter Threshold Voltage	$V_{GE(th)}$	$V_{CE} = 10\text{V}, I_C = 2.5\text{mA}$	4.5	6.0	7.5	Volts
Gate-Emitter Cutoff Current	I_{GES}	$V_{GE} = V_{GES}, V_{CE} = 0\text{V}$	—	—	0.5	μA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$V_{GE} = 15\text{V}, I_C = 25\text{A}, T_j = 25^\circ\text{C}$	—	2.7	3.4	Volts
		$V_{GE} = 15\text{V}, I_C = 25\text{A}, T_j = 150^\circ\text{C}$	—	2.45	—	Volts
Input Capacitance	C_{ies}		—	—	5.0	nF
Output Capacitance	C_{oes}	$V_{GE} = 0\text{V}, V_{CE} = 10\text{V}$	—	—	3.8	nF
Reverse Transfer Capacitance	C_{res}		—	—	1.0	nF
Total Gate Charge	Q_G	$V_{CC} = 600\text{V}, I_C = 25\text{A}, V_{GE} = 15\text{V}$	—	125	—	nC
Resistive	Turn-on Time	$V_{GE1} = V_{GE2} = 15\text{V},$ $V_{CC} = 600\text{V}, I_C = 25\text{A},$ $R_g = 13\Omega,$	—	—	100	nS
	Rise Time		t_r	—	—	200
Switching	Turn-off Time	Resistive Load	—	—	150	nS
	Fall Time		t_f	—	—	350
Emitter-Collector Voltage	V_{EC}	$I_E = 25\text{A}, V_{GE} = 0\text{V}$	—	—	3.5	Volts
Reverse Recovery Time	t_{rr}	$I_E = 25\text{A}, V_{GE} = 0\text{V},$	—	—	250	nS
Reverse Recovery Charge	Q_{rr}	$di_E/dt = -50\text{A}/\mu\text{s}$	—	0.22	—	μC
Thermal Resistance (Junction-to-Fin)	$R_{th(j-f)}$	Per IGBT	—	—	1.2	$^\circ\text{C/W}$
		Per FWDi	—	—	1.9	$^\circ\text{C/W}$

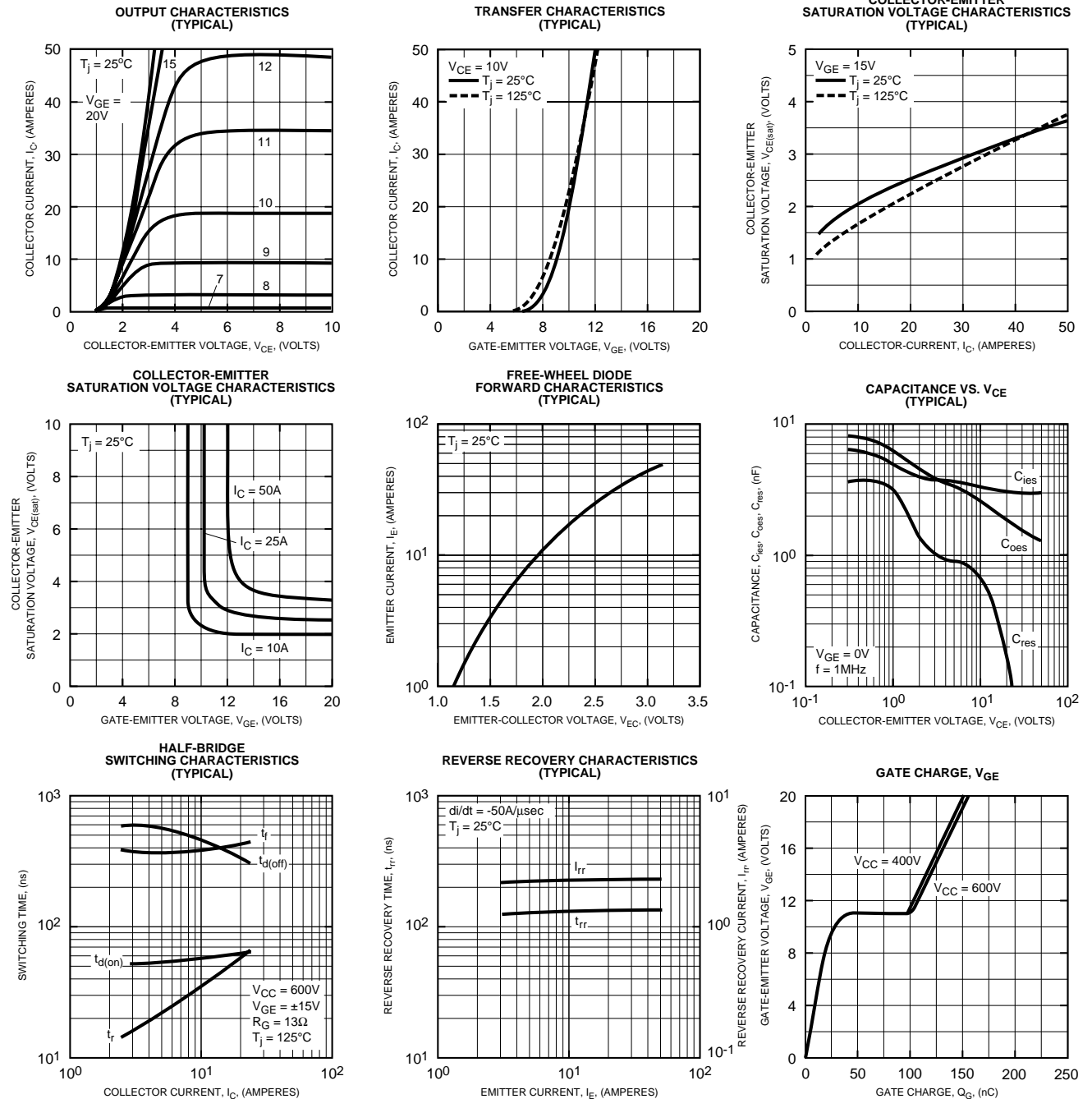
* Pulse width and repetition rate should be such that device junction temperature does not exceed maximum rating.

** Characteristics of the anti-parallel emitter-collector free-wheel diode.



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