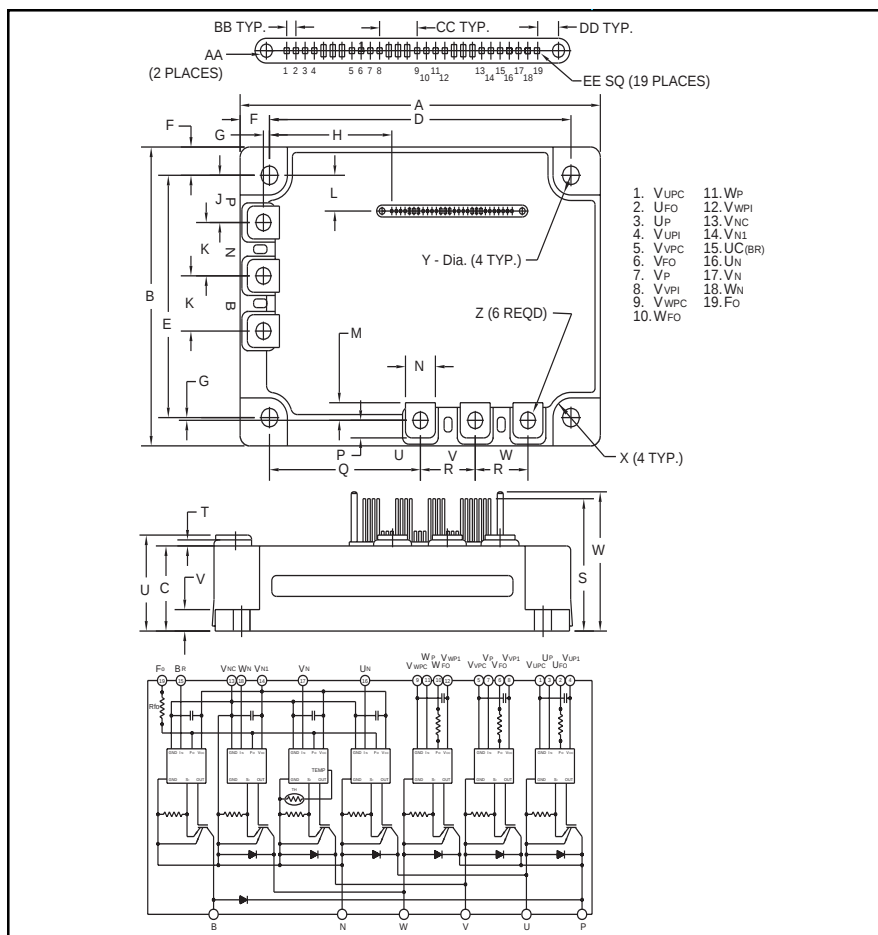


Intellimod™ Module

**Three Phase + Brake
IGBT Inverter Output
200 Amperes/600 Volts**



Outline Drawing and Circuit Diagram

Dimensions	Inches	Millimeters
A	5.31±0.04	135.0±1.0
B	4.33±0.04	110.0±1.0
C	0.84	21.3
D	4.74±0.02	120.5±0.5
E	3.76±0.02	95.5±0.5
F	0.29	7.25
G	0.02±0.1	0.5±0.3
H	1.60	40.68
J	0.65	16.5
K	0.79	20.0
L	0.43	11.0
M	0.29	7.4
N	0.39	10.0
P	0.24	6.0
Q	2.01	51.0

Dimensions	Inches	Millimeters
R	1.02	26.0
S	1.33	33.7
T	0.07	1.8
U	0.95 +0.06	24.1 +1.5
V	0.28	7.0
W	1.37	34.7
X	0.24 Rad.	Rad. 6.0
Y	0.22 Dia.	Dia. 5.5
Z	M5 Metric	M5
AA	0.10	2.54
BB	0.08	2.0
CC	0.39	10.0
DD	0.13	3.22
EE	0.02	0.5



Description:

Powerex Intellimod™ Intelligent Power Modules are isolated base modules designed for power switching applications operating at frequencies to 20kHz. Built-in control circuits provide optimum gate drive and protection for the IGBT and free-wheel diode power devices.

Features:

- ☐ Complete Output Power Circuit
- ☐ Gate Drive Circuit
- ☐ Protection Logic
 - Short Circuit
 - Over Current
 - Over Temperature
 - Under Voltage

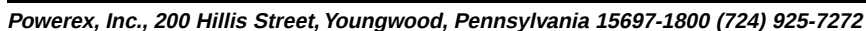
Applications:

- ☐ Inverters
- ☐ UPS
- ☐ Motion/Servo Control
- ☐ Power Supplies

Ordering Information:

Example: Select the complete part number from the table below -i.e. PM200RSA060 is a 600V, 200 Ampere Intellimod™ Intelligent Power Module.

Type	Current Rating Amperes	V _{CES} Volts (x 10)
PM	200	60



Intellimod™ Module

Three Phase + Brake IGBT Inverter Output

200 Amperes/600 Volts

Absolute Maximum Ratings, T_j = 25°C unless otherwise specified

Characteristics	Symbol	PM200RSA060	Units
Power Device Junction Temperature	T_j	-20 to 150	°C
Storage Temperature	T_{stg}	-40 to 125	°C
Case Operating Temperature	T_C	-20 to 100	°C
Mounting Torque, M5 Mounting Screws	—	17	in-lb
Mounting Torque, M5 Main Terminal Screw	—	17	in-lb
Module Weight (Typical)	—	920	Grams
Supply Voltage Protected by OC and SC ($V_D = 13.5 - 16.5V$, Inverter Part, $T_j = 125^\circ C$)	$V_{CC(prot.)}$	400	Volts
Isolation Voltage, AC 1 minute, 60Hz Sinsoidal	V_{RMS}	2500	Volts

Supply Voltage Applied between (V_{UP1} - V_{UPC} , V_{VP1} - V_{VPC} , V_{WP1} - V_{WPC} , V_{N1} - V_{NC})	V_D	20	Volts
Input Voltage Applied between (U_P , V_P , W_P , U_N , V_N , W_N , B_I)	V_{CIN}	20	Volts
Fault Output Supply Voltage (Applied between F_O - V_{NC} , $*F_O$ - V_{+PC})	V_{FO}	20	Volts
Fault Output Current (Sink Current at F_O Terminals)	I_{FO}	20	mA

Collector-Emitter Voltage ($V_D = 15V$, $V_{CIN} = 15V$)	V_{CES}	600	Volts
Collector Current, $\pm$	I_C	200	Amperes
Peak Collector Current, $\pm$	I_{CP}	400	Amperes
Supply Voltage (Applied between P - N)	V_{CC}	450	Volts
Supply Voltage, Surge (Applied between P - N)	$V_{CC(surge)}$	500	Volts
Collector Dissipation	P_C	595	Watts

Collector-Emitter Voltage ($V_D = 15V$, $V_{CIN} = 15V$)	V_{CES}	600	Volts
Collector Current, $\pm$	I_C	75	Amperes
Peak Collector Current, $\pm$	I_{CP}	150	Amperes
Supply Voltage (Applied between P - N)	V_{CC}	450	Volts
Supply Voltage, Surge (Applied between P - N)	$V_{CC(surge)}$	500	Volts
Collector Dissipation	P_C	370	Watts
Diode Forward Current	I_F	75	Amperes
Diode DC Reverse Voltage	$V_{R(DC)}$	600	Volts

PM200RSA060
Intellimod™ Module
Three Phase + Brake IGBT Inverter Output
200 Amperes/600 Volts

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

Characteristics	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Control Sector						
Over Current Trip Level Inverter Part	OC	$-20^\circ\text{C} \leq T \leq 125^\circ\text{C}$	310	400	—	Amperes
Over Current Trip Level Brake Part			115	161	—	Amperes
Short Circuit Trip Level Inverter Part	SC	$-20^\circ\text{C} \leq T \leq 125^\circ\text{C}$	—	560	—	Amperes
Short Circuit Trip Level Brake Part			—	241	—	Amperes
Over Current Delay Time	$t_{\text{off}}(\text{OC})$	$V_D = 15\text{V}$	—	10	—	μS
Over Temperature Protection	OT	Trip Level	111	118	125	$^\circ\text{C}$
	OT_R	Reset Level	—	100	—	$^\circ\text{C}$
Supply Circuit Under Voltage Protection	UV	Trip Level	11.5	12.0	12.5	Volts
	UV_R	Reset Level	—	12.5	—	Volts
Supply Voltage	V_D	Applied between $V_{\text{UP}1}$ - V_{UPC} , $V_{\text{VP}1}$ - V_{VPC} , $V_{\text{WP}1}$ - V_{WPC} , $V_{\text{N}1}$ - V_{NC}	13.5	15	16.5	Volts
Circuit Current	I_D	$V_D = 15\text{V}$, $V_{\text{CIN}} = 15\text{V}$, $V_{\text{N}1}$ - V_{NC}	—	52	72	mA
		$V_D = 15\text{V}$, $V_{\text{CIN}} = 15\text{V}$, $V_{\text{XP}1}$ - V_{XPC}	—	13	18	mA
Input ON Threshold Voltage	$V_{\text{CIN}(\text{on})}$	Applied between	1.2	1.5	1.8	Volts
Input OFF Threshold Voltage	$V_{\text{CIN}(\text{off})}$	U_P , V_P , W_P , U_N , V_N , W_N , B_r	1.7	2.0	2.3	Volts
PWM Input Frequency	f_{PWM}	3- Sinusoidal	—	15	20	kHz
Fault Output Current	$I_{\text{FO}(\text{H})}$	$V_D = 15\text{V}$, $V_{\text{FO}} = 15\text{V}$	—	—	0.01	mA
	$I_{\text{FO}(\text{L})}$	$V_D = 15\text{V}$, $V_{\text{FO}} = 15\text{V}$	—	10	15	mA
Minimum Fault Output Pulse Width	t_{FO}	$V_D = 15\text{V}$	1.0	1.8	—	mS
Brake Sector						
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{sat})}$	$V_D = 15\text{V}$, $V_{\text{CIN}} = 0\text{V}$, $I_C = 75\text{A}$, $T_j = 25^\circ\text{C}$	—	1.8	2.7	Volts
		$V_D = 15\text{V}$, $V_{\text{CIN}} = 0\text{V}$, $I_C = 75\text{A}$, $T_j = 125^\circ\text{C}$	—	1.85	2.78	Volts
Diode Forward Voltage	V_{FM}	$-I_C = 75\text{A}$, $V_D = 15\text{V}$, $V_{\text{CIN}} = 15\text{V}$	—	1.7	2.5	Volts
Collector Cutoff Current	I_{CES}	$V_{\text{CE}} = V_{\text{CES}}$, $T_j = 25^\circ\text{C}$	—	—	1	mA
		$V_{\text{CE}} = V_{\text{CES}}$, $T_j = 125^\circ\text{C}$	—	—	10	mA



Intellimod™ Module

Three Phase + Brake IGBT Inverter Output

200 Amperes/600 Volts

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

IGBT Inverter Sector

Thermal Characteristics

Recommended Conditions for Use

Characteristic	Symbol	Condition	Value	Units
Supply Voltage	V _{CC}	Applied across P-N Terminals	≤ 400	Volts
	V _D	Applied between V _{UP1} -V _{UPC} , V _{N1} -V _{NC} , V _{VP1} -V _{VPC} , V _{WP1} -V _{WPC}	15 ± 1.5	Volts
Input ON Voltage	V _{CIN(on)}	Applied between	≤ 0.8	Volts
Input OFF Voltage	V _{CIN(off)}	U _P , V _P , W _P , U _N , V _N , W _N , B _r -	≥ 4.0	Volts
PWM Input Frequency	f _{PWM}	Using Application Circuit	≤ 20	kHz
Minimum Dead Time	t _{DEAD}	Input Signal	≥ 2.5	μs

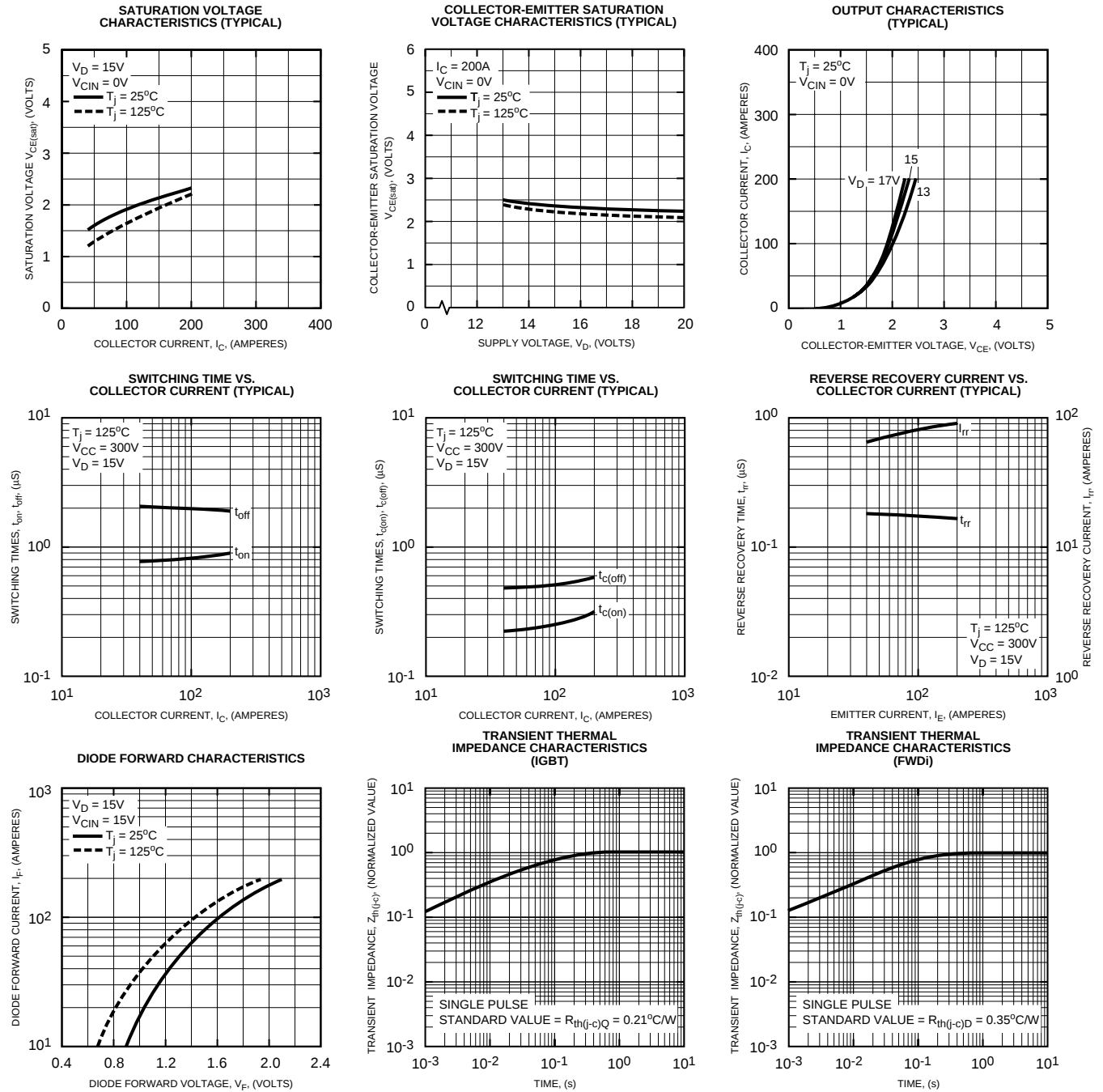
PM200RSA060

Intellimod™ Module

Three Phase + Brake IGBT Inverter Output

200 Amperes/600 Volts

Inverter Part



PM200RSA060

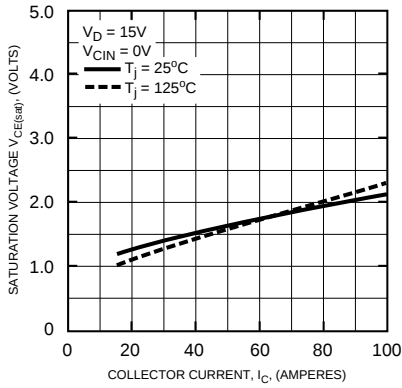
Intellimod™ Module

Three Phase + Brake IGBT Inverter Output

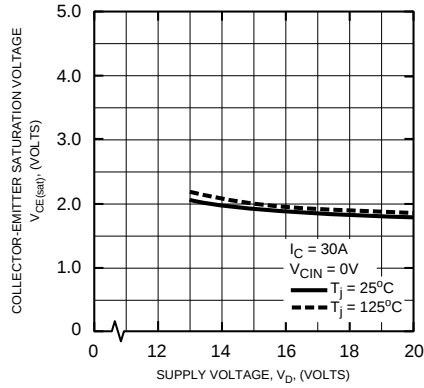
200 Amperes/600 Volts

Brake Part

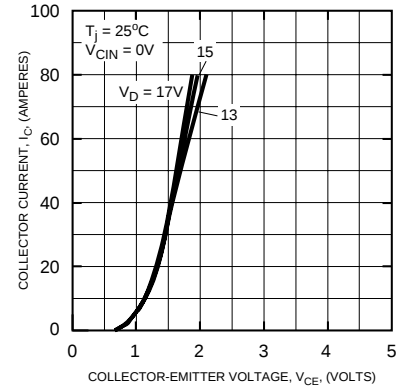
SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



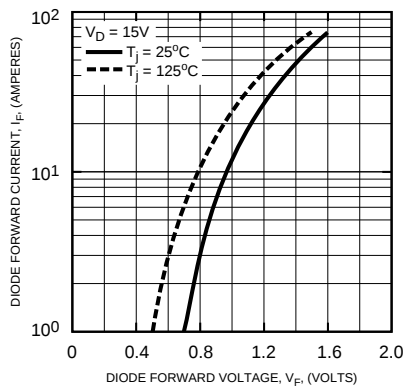
COLLECTOR-EMITTER SATURATION VOLTAGE CHARACTERISTICS (TYPICAL)



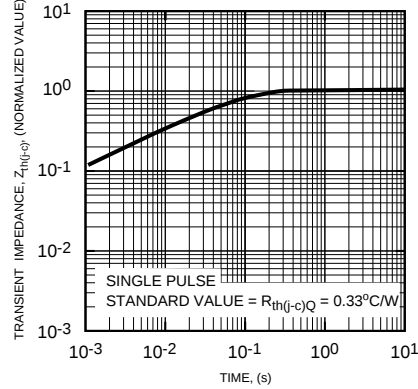
OUTPUT CHARACTERISTICS (TYPICAL)



DIODE FORWARD CHARACTERISTICS



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (IGBT)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (FWD)

