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With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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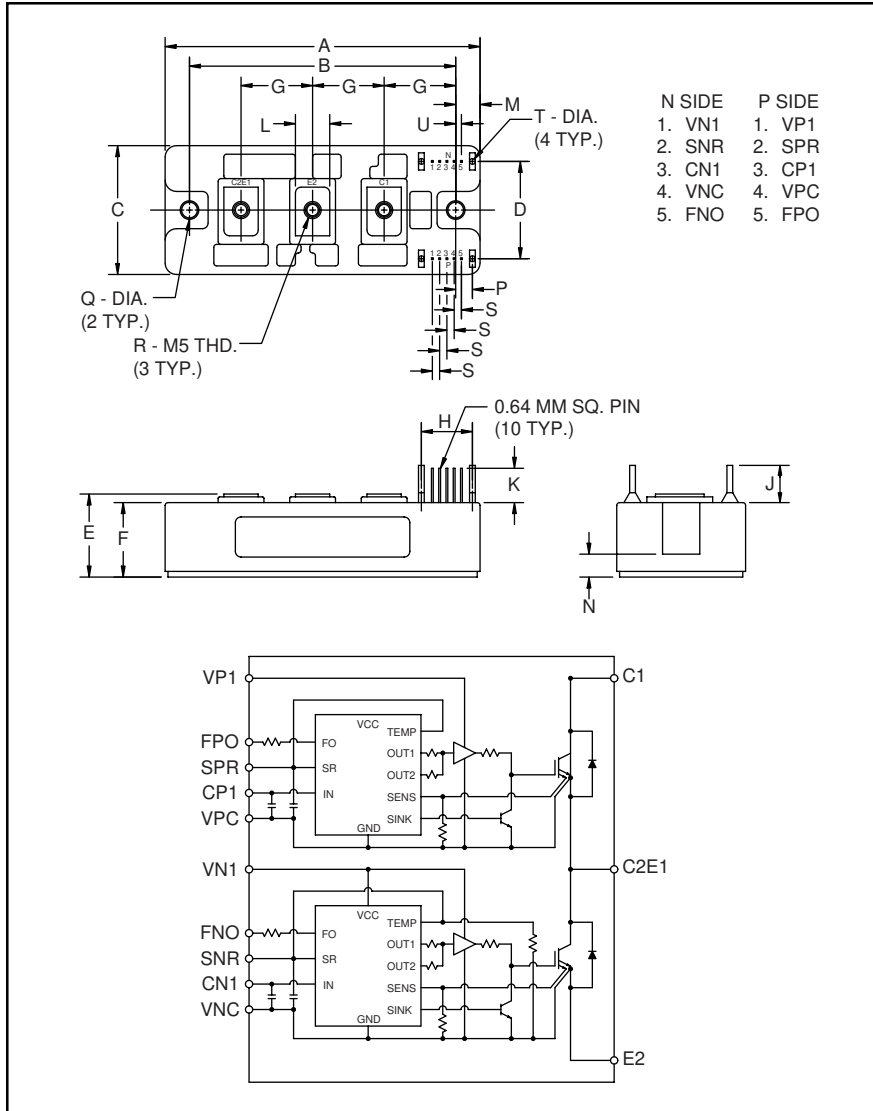
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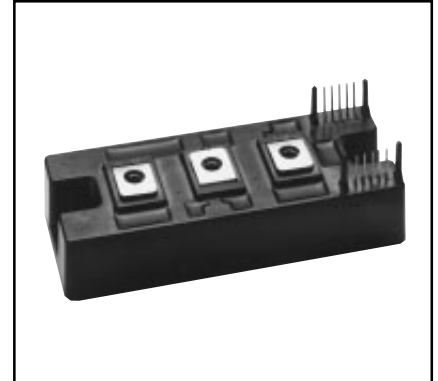
Intellimod™ Module Single Phase IGBT Inverter Output 75 Amperes/1200 Volts



Outline Drawing and Circuit Diagram

| Dimensions | Inches | Millimeters |
|------------|------------------|--------------|
| A | 4.33 | 110.0 |
| B | 3.66±0.010 | 93.0±0.25 |
| C | 1.77 | 45.0 |
| D | 1.34 | 34.0 |
| E | 1.14 +0.04/-0.02 | 29.0 +1/-0.5 |
| F | 1.02 | 26.0 |
| G | 0.98 | 25.0 |
| H | 0.702 | 17.84 |
| J | 0.55 | 14.0 |
| K | 0.51 | 13.0 |

| Dimensions | Inches | Millimeters |
|------------|-----------|-------------|
| L | 0.47 | 12.0 |
| M | 0.33 | 8.5 |
| N | 0.28 | 7.0 |
| P | 0.230 | 5.84 |
| Q | 0.22 Dia. | Dia. 5.5 |
| R | M5 Metric | M5 |
| S | 0.100 | 2.54 |
| T | 0.08 Dia. | Dia. 2.0 |
| U | 0.08 | 2.0 |



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. PM75DSA120 is a 1200V, 75 Ampere Intellimod™ Intelligent Power Module.

| Type | Current Rating Amperes | V _{CEs} Volts (x 10) |
|------|---------------------------|----------------------------------|
| PM | 75 | 120 |



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

PM75DSA120
Intellimod™ Module
Single Phase IGBT Inverter Output
75 Amperes/1200 Volts

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

| Characteristics | Symbol | PM75DSA120 | Units |
|--|------------------------|------------|------------------|
| Power Device Junction Temperature | T_j | -20 to 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{stg} | -40 to 125 | $^\circ\text{C}$ |
| Case Operating Temperature | T_C | -20 to 100 | $^\circ\text{C}$ |
| Mounting Torque, M5 Mounting Screws | — | 17 | in-lb |
| Mounting Torque, M5 Main Terminal Screws | — | 17 | in-lb |
| Module Weight (Typical) | — | 340 | Grams |
| Supply Voltage Protected by OC and SC ($V_D = 13.5 - 16.5\text{V}$, Inverter Part) | $V_{\text{CC(prot.)}}$ | 800 | Volts |
| Isolation Voltage, AC 1 minute, 60Hz Sinusoidal | V_{RMS} | 2500 | Volts |

Control Sector

| | | | |
|--|------------------|----|-------|
| Supply Voltage Applied between ($V_{P1}-V_{PC}$, $V_{N1}-V_{NC}$) | V_D | 20 | Volts |
| Input Voltage Applied between ($C_{P1}-V_{PC}$, $C_{N1}-V_{NC}$) | V_{CIN} | 10 | Volts |
| Fault Output Supply Voltage (Applied between $F_{po}-V_{pc}$ and $F_{no}-V_{nc}$) | V_{FO} | 20 | Volts |
| Fault Output Current | I_{FO} | 20 | mA |

IGBT Inverter Sector

| | | | |
|---|------------------------|------|---------|
| Collector-Emitter Voltage ($V_D = 15\text{V}$, $V_{\text{CIN}} = 5\text{V}$) | V_{CES} | 1200 | Volts |
| Collector Current, \pm | I_C | 75 | Amperes |
| Peak Collector Current, \pm | I_{CP} | 150 | Amperes |
| Supply Voltage (Applied between C1 - E2) | V_{CC} | 900 | Volts |
| Supply Voltage, Surge (Applied between C1 - E2) | $V_{\text{CC(surge)}}$ | 1000 | Volts |
| Collector Dissipation | P_C | 460 | Watts |

PM75DSA120
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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 | $-20^\circ\text{C} \leq T \leq 125^\circ\text{C}$ | 105 | 170 | — | Amperes |
| Short Circuit Trip Level Inverter Part | SC | $-20^\circ\text{C} \leq T \leq 125^\circ\text{C}$ | 150 | 250 | — | Amperes |
| Over Current Delay Time | $t_{\text{off}}(\text{OC})$ | $V_D = 15\text{V}$ | — | 5 | — | μS |
| Over Temperature Protection | OT | Trip Level | 100 | 110 | 120 | $^\circ\text{C}$ |
| | OT_R | Reset Level | 85 | 95 | 105 | $^\circ\text{C}$ |
| 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 $V_{P1}-V_{PC}$, $V_{N1}-V_{NC}$ | 13.5 | 15 | 16.5 | Volts |
| Circuit Current | I_D | $V_D = 15\text{V}$, $V_{\text{CIN}} = 5\text{V}$, $V_{N1}-V_{NC}$ | — | 13 | 20 | mA |
| | | $V_D = 15\text{V}$, $V_{\text{CIN}} = 5\text{V}$, $V_{\text{XP1}}-V_{\text{XPC}}$ | — | 13 | 20 | mA |
| Input ON Threshold Voltage | $V_{\text{CIN(on)}}$ | Applied between | 1.2 | 1.5 | 1.8 | Volts |
| Input OFF Threshold Voltage | $V_{\text{CIN(off)}}$ | $C_{P1}-V_{PC}$, $C_{N1}-V_{NC}$ | 1.7 | 2.0 | 2.3 | Volts |
| PWM Input Frequency | f_{PWM} | 3- \emptyset Sinusoidal | — | 15 | 20 | kHz |
| Fault Output Current | $I_{\text{FO(H)}}$ | $V_D = 15\text{V}$, $V_{\text{FO}} = 15\text{V}$ | — | — | 0.01 | mA |
| | $I_{\text{FO(L)}}$ | $V_D = 15\text{V}$, $V_{\text{FO}} = 15\text{V}$ | — | 10 | 15 | mA |
| Minimum Fault Output Pulse Width | t_{FO} | $V_D = 15\text{V}$ | 1.0 | 1.8 | — | mS |
| SXR Terminal Output Voltage | V_{SXR} | $T_j \leq 125^\circ\text{C}$, $R_{\text{in}} = 6.8 \text{ k}\Omega$ (S_{PR} , S_{NR}) | 4.5 | 5.1 | 5.6 | Volts |

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

| Characteristics | Symbol | Test Conditions | Min. | Typ. | Max. | Units |
|--------------------------------------|---------------|--|------|------|------|---------------|
| IGBT Inverter Sector | | | | | | |
| Collector Cutoff Current | I_{CEX} | $V_{CE} = V_{CEX}, T_j = 25^\circ\text{C}$ | — | — | 1 | mA |
| | | $V_{CE} = V_{CEX}, T_j = 125^\circ\text{C}$ | — | — | 10 | mA |
| Diode Forward Voltage | V_{FM} | $-I_C = 75\text{A}, V_D = 15\text{V}, V_{CIN} = 5\text{V}$ | — | 2.5 | 3.5 | Volts |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $V_D = 15\text{V}, V_{CIN} = 0\text{V}, I_C = 75\text{A}$ | — | 2.3 | 3.2 | Volts |
| | | $V_D = 15\text{V}, V_{CIN} = 0\text{V}, I_C = 75\text{A}, T_j = 125^\circ\text{C}$ | — | 2.1 | 2.9 | Volts |
| Inductive Load Switching Times | t_{on} | | 0.5 | 1.4 | 2.5 | μS |
| | t_{rr} | $V_D = 15\text{V}, V_{CIN} = 0 \sim 5\text{V}$ | — | 0.2 | 0.4 | μS |
| | $t_{C(on)}$ | $V_{CC} = 600\text{V}, I_C = 75\text{A}$ | — | 0.4 | 1.0 | μS |
| | t_{off} | $T_j = 125^\circ\text{C}$ | — | 2.5 | 3.5 | μS |
| | $t_{C(off)}$ | | — | 0.6 | 1.1 | μS |

Thermal Characteristics

| Characteristic | Symbol | Condition | Min. | Typ. | Max. | Units |
|-------------------------------------|----------------|--|------|------|-------|-----------------------|
| Junction to Case Thermal Resistance | $R_{th(j-c)Q}$ | Each IGBT | — | — | 0.27 | $^\circ\text{C/Watt}$ |
| | $R_{th(j-c)D}$ | Each FWDi | — | — | 0.51 | $^\circ\text{C/Watt}$ |
| Contact Thermal Resistance | $R_{th(c-f)}$ | Case to Fin Per Module Thermal Grease Applied | — | — | 0.060 | $^\circ\text{C/Watt}$ |

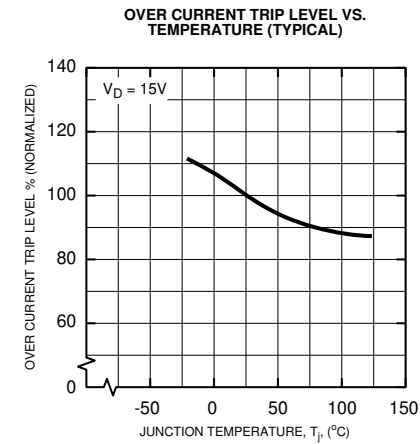
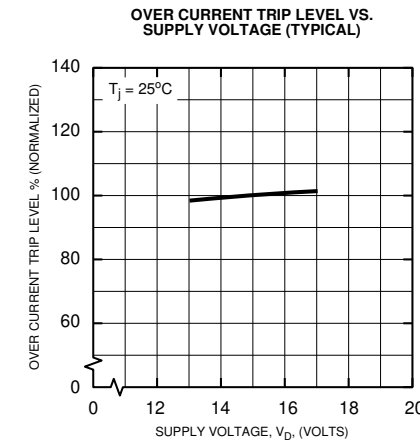
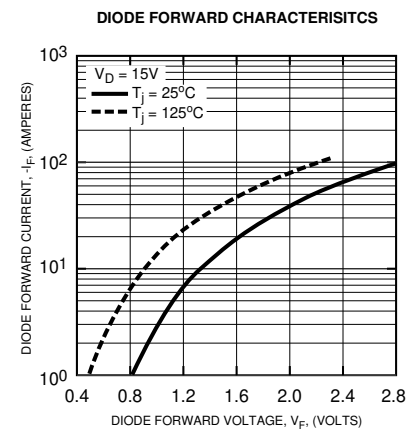
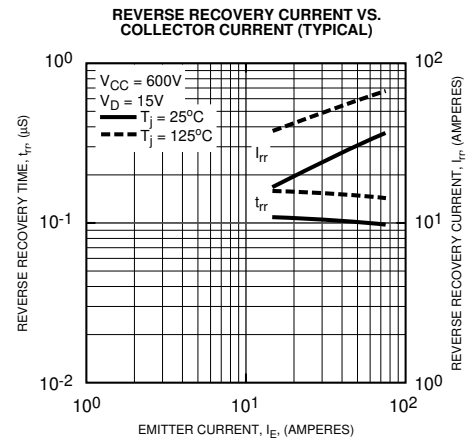
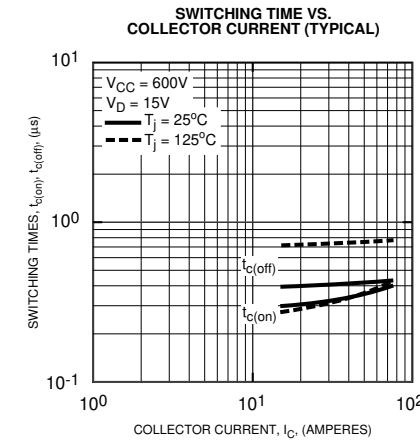
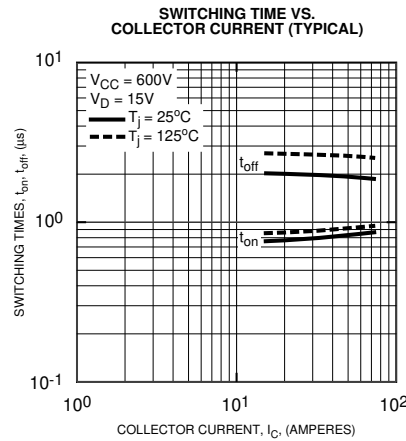
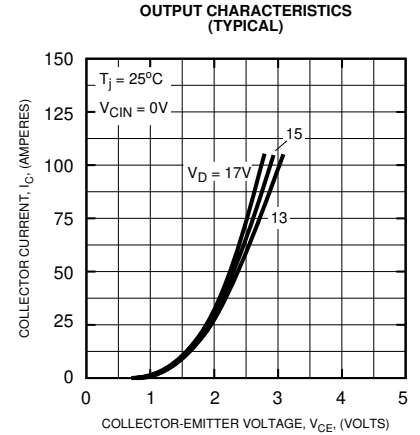
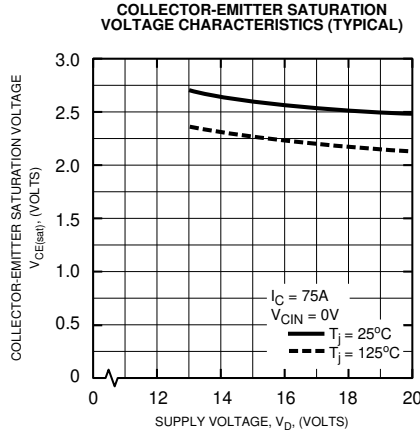
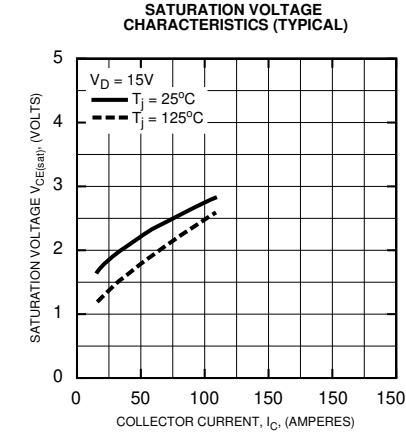
Recommended Conditions for Use

| Characteristic | Symbol | Condition | Value | Units |
|---------------------|----------------|--|--------------------|---------------|
| Supply Voltage | V_{CC} | Applied across C1-E2 Terminals | 0 ~ 800 | Volts |
| | V_D | Applied between $V_{P1}-V_{PC}, V_{N1}-V_{NC}$ | 15 ± 1.5 | Volts |
| Input ON Voltage | $V_{CIN(on)}$ | Applied between | 0 ~ 0.8 | Volts |
| Input OFF Voltage | $V_{CIN(off)}$ | $C_{P1}-V_{PC}, C_{N1}-V_{NC}$ | $4.0 \sim V_{SXR}$ | Volts |
| PWM Input Frequency | f_{PWM} | Using Application Circuit | 5 ~ 20 | kHz |
| Minimum Dead Time | t_{DEAD} | Input Signal | ≥ 3.5 | μS |



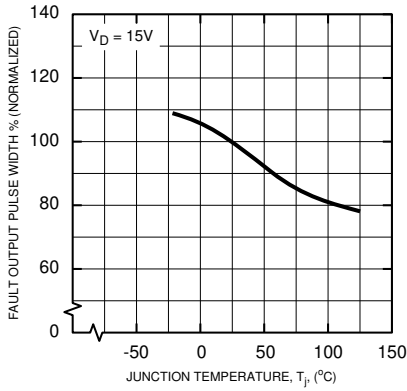
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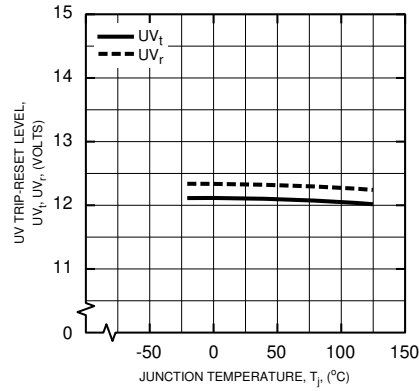


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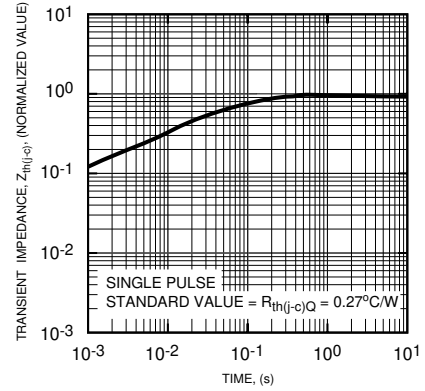
FAULT OUTPUT PULSE WIDTH VS. TEMPERATURE (TYPICAL)



CONTROL SUPPLY VOLTAGE TRIP-RESET LEVEL TEMPERATURE DEPENDENCY (TYPICAL)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (IGBT)



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS (FWD)

