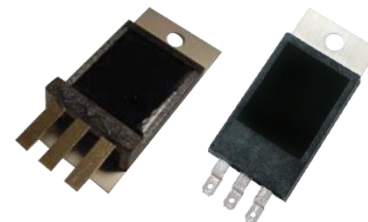


POWEREX[®] Product Change Notification

QIS4506001 and QIS4506002 Single Discrete IGBT To Be Replaced by QIS4506012 and QIS4506013 # : 2017-029 Rev.: 00



Date: 2017 / NOV / 07

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Products to be Changed:

Single Discrete IGBT part numbers QIS4506001 and QIS4506002 have been discontinued.

Description of Change:

The single discrete IGBT part number QIS4506001 and QIS4506002 are no longer available as the result of the discontinuation of the older Mitsubishi Electric H-series IGBT chip technology. Powerex will be replacing those parts with the part numbers QIS4506012 and QIS4506013 which will be built using the newer Mitsubishi Electric R-Series IGBT Chip Technology. This change will affect the following characteristics. Refer to the datasheets for the test conditions.

| Characteristic | Symbol | QIS4506001 / QIS4506002 | QIS4506012 / QIS4506013 |
|--|---------------|--|--|
| Collector Current | I_C | 60 A ($T_C = 127^\circ\text{C}$) | 65 A ($T_C = 127^\circ\text{C}$) |
| Peak Collector Current (Pulsed) | I_{CM} | 120 A | 130 A |
| Gate-Emitter Threshold Voltage | $V_{GE(th)}$ | 4.5 V Min. 6.0 V Typ. 7.5 V Max | 5.8 V Min. 6.3 V Typ. 6.8 V Max |
| Collector-Emitter Saturation Voltage (25°C) | $V_{CE(sat)}$ | 3.0 V Typ 3.9 V Max.. | 3.5 V Typ. |
| Collector-Emitter Saturation Voltage (125°C) | $V_{CE(sat)}$ | 3.6 V Typ. | 4.4 V Typ. 5.1 V Max. |
| Total Gate Charge | Q_G | 450 nC Typ. | 750 nC Typ. |
| Input Capacitance | C_{ies} | 9.0 nF Typ. | 9.7 nF Typ. |
| Output Capacitance | C_{oes} | 0.65 nF Typ. | 0.61 nF Typ. |
| Reverse Transfer Capacitance | C_{res} | 0.2 nF Typ. | 0.28 nF Typ. |
| Turn-On Delay Time | $t_{d(on)}$ | 2.4 μs Max. | 0.95 μs Typ. 1.5 μs Max. |
| Rise Time | t_r | 2.4 μs Max. | 0.30 μs Typ. 0.50 μs Max. |
| Turn-Off Delay Time | $t_{d(off)}$ | 6.0 μs Max. | 3.8 μs Typ. 5.0 μs Max. |
| Fall Time | t_f | 1.2 μs Max. | 0.45 μs Typ. 1.0 μs Max. |
| Turn-on Switching Energy | E_{on} | 250 mJ/P Typ. | 305 mJ/P Typ. |
| Turn-off Switching Energy | E_{off} | 170 mJ/P Typ. | 239 mJ/P Typ. |
| Thermal Resistance, Junction to Case | $R_{th(j-c)}$ | 0.10 $^\circ\text{C/W}$ Typ. 0.12 $^\circ\text{C/W}$ Max. | 0.10 $^\circ\text{C/W}$ Typ. 0.11 $^\circ\text{C/W}$ Max. |

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Reason for Change:

Mitsubishi Electric has discontinued the production of their older H-Series IGBT chips. Powerex is offering similar parts using the newer Mitsubishi R-Series IGBT chip.

Identification of Change:

The parts built with the Mitsubishi Electric R-Series IGBT chips are identified with new part numbers QIS4506012 and QIS4506013.

Time Schedule for Change:

Delivery Begins: Fourth Quarter of 2017

Supporting Documentation:

Attachments – QIS4506012 Data Sheet, QIS4506013 Data Sheet

Quality Management system:

Parts are manufactured at the Powerex Youngwood, PA facility which has a quality system that is in compliance with ISO 9001 and AS9100.

Customer Approval for: PCN # 2017-029

- Please check the appropriate box and return this form to Powerex or our manufacturing representative within 30 days.
- According to JEDEC Standard JESD46, a lack of response to this product change notification within 30 days constitutes the customer's acceptance of the change.

We agree with this change and its schedule.

We have objection(s) as noted here:

We request additional information:

Customer:

Signature: