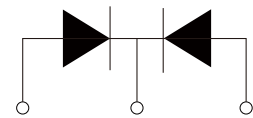
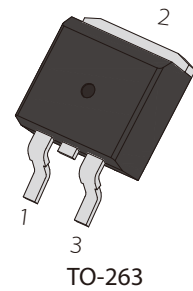


FEATURES

- | Low power loss. high efficiency. High surge capacity
- | For use in low voltage, high frequency inverters, free wheeling, and polarity protection applications
- | Metasilicon junction, majority carrier conduction
- | High current Capability. low forward voltage drop
- | Guard ring for over voltage protection



Schematic Symbol

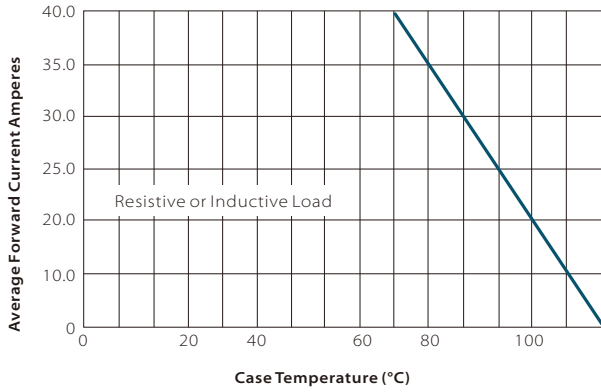
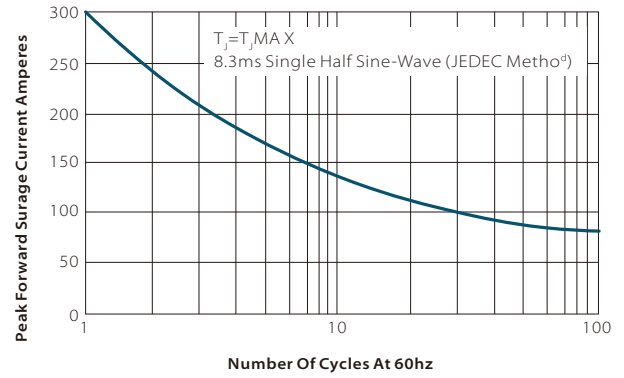
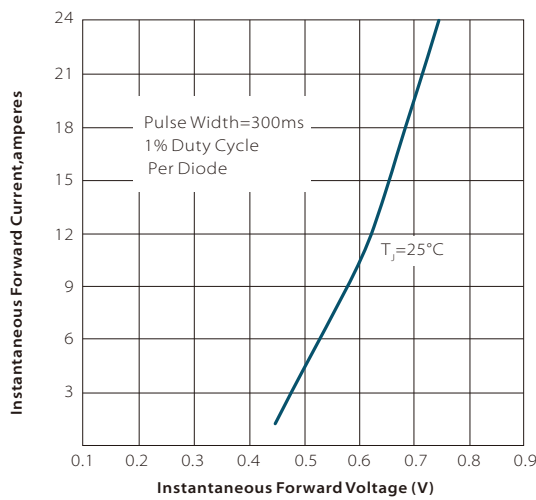
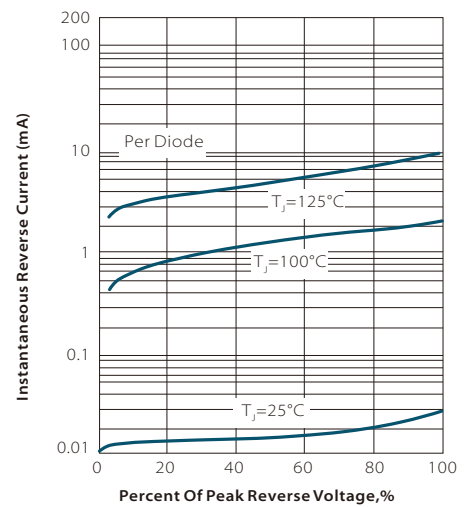
APPROVALS

| | |
|-------------|------------------------------------|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance with IEC61249-2-21:2003 |

MAXIMUM RATINGS (T_A = 25°C)

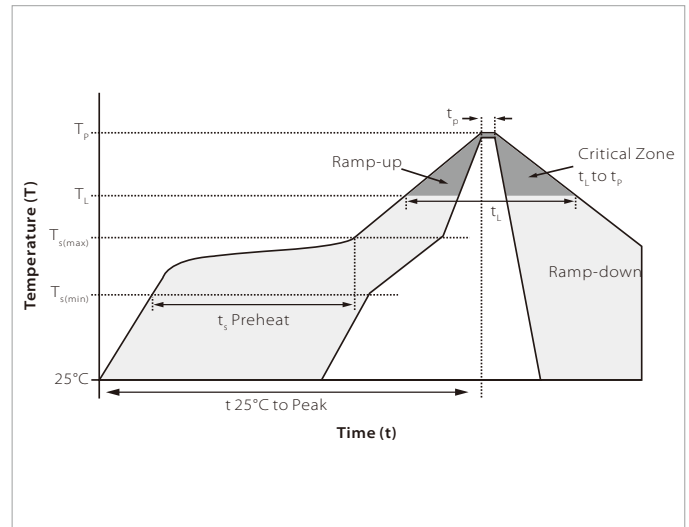
| Parameter | Symbol | MBRF 4040 VCT | MBRF 4045 VCT | MBRF 4050 VCT | MBRF 4060 VCT | MBRF 4080 VCT | MBRF 4090 VCT | MBRF 40100 VCT | MBRF 40150 VCT | MBRF 40200 VCT | Unit | |
|---|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|----------------|----------------|----------------|------|----|
| Marking | | MBR 4040 | MBR 4045 | MBR 4050 | MBR 4060 | MBR 4080 | MBR 4090 | MBR 40100 | MBR 40150 | MBR 40200 | | |
| Maximum repetitive peak reverse voltage | V _{RRM} | 40 | 45 | 50 | 60 | 80 | 90 | 100 | 150 | 200 | V | |
| Maximum RMS voltage | V _{RMS} | 28 | 31.5 | 35 | 42 | 56 | 63 | 70 | 105 | 140 | V | |
| Maximum DC blocking voltage | V _{DC} | 40 | 45 | 50 | 60 | 80 | 90 | 100 | 150 | 200 | V | |
| Maximum Average Forward Current | I _{F(AV)} | 40 | | | | | | | | | A | |
| Peak Forward Surge Current: 8.3ms single half sine-wave superimposed on rated load (JEDEC method) | I _{FSM} | 400 | | | | | | | | | A | |
| Maximum Forward Voltage at 20A per leg | V _F | 0.53 | | 0.58 | | 0.82 | | | 0.90 | | V | |
| Maximum DC Reverse Current at Rated DC Blocking Voltage | T _J = 25°C | 0.1 | | | | | | | 0.05 | | mA | |
| | T _J = 125°C | 20 | | | | | | | | | mA | |
| Typical Thermal Resistance | R _{θJC} | 1.3 | | | | | | | | | °C/W | |
| Maximum Operating Junction Temperature | T _J | 150 | | | | | 175 | | | | | °C |
| Storage Temperature | T _{STG} | -55 to +150 | | | | | -65~+175 | | | | | °C |

CHARACTERISTIC CURVES

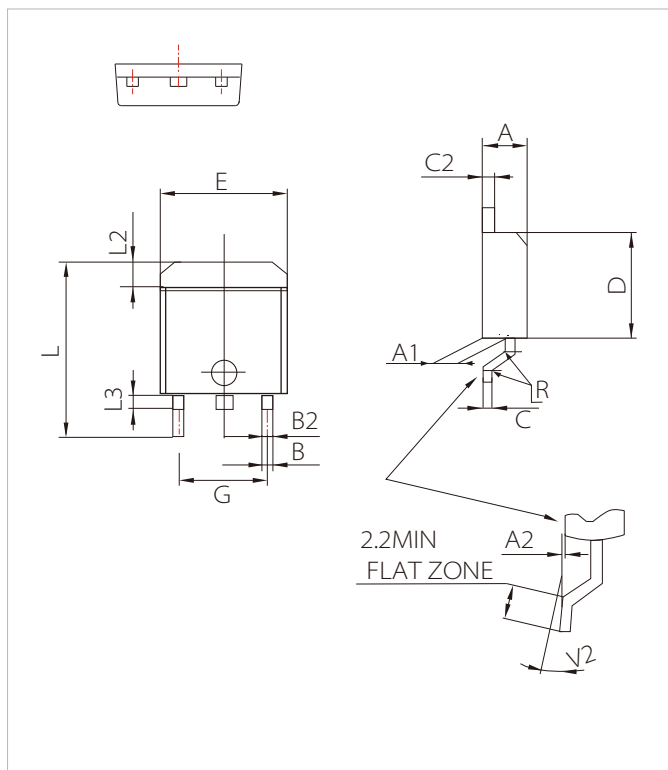
Fig. 1- Forward Current Derating Curve

Fig. 2-Maximum Non-repetitive Peak Forward Surge Current Perleg

Fig. 3-Typical Instantaneous Forward Characteristics

Fig. 4-Typical Reverse Characteristics


SOLDERING PARAMETERS

| Reflow Condition | | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat | Temperature Max ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (t_p) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Time (min to max) (t_i) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260°C |
| Time within 5°C of actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (T_p) | | 8 minutes max. |
| Do not exceed | | 260°C |



TO-263 PACKAGE MECHANICAL DATA



| Ref. | Dimensions | | | | | |
|------|-------------|------|-------|--------|-------|-------|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 4.30 | | 4.60 | 0.169 | | 0.181 |
| A1 | 2.49 | | 2.69 | 0.098 | | 0.106 |
| A2 | 0.03 | | 0.23 | 0.001 | | 0.009 |
| B | 0.70 | | 0.93 | 0.027 | | 0.037 |
| B2 | 1.25 | 1.40 | | 0.048 | 0.055 | |
| C | 0.45 | | 0.60 | 0.017 | | 0.024 |
| C2 | 1.21 | | 1.36 | 0.047 | | 0.054 |
| D | 8.95 | | 9.35 | 0.352 | | 0.368 |
| E | 10.00 | | 10.28 | 0.392 | | 0.405 |
| G | 4.88 | | 5.28 | 0.192 | | 0.208 |
| L | 15.00 | | 15.85 | 0.590 | | 0.624 |
| L2 | 1.27 | | 1.40 | 0.050 | | 0.055 |
| L3 | 1.40 | | 1.75 | 0.055 | | 0.069 |
| R | | 0.40 | | | 0.016 | |
| V2 | 0° | | 8° | 0° | | 8° |

ORDERING INFORMATION

| Part Number | Package | QTY/Reel | Reel Size |
|--------------------------|---------|----------|-----------|
| MBRF4040VCT-MBRF40200VCT | TO-263 | 800CS | 13" |

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