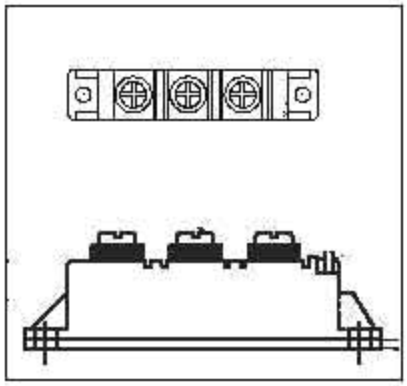
# Ruttonsha International Rectifier Ltd.

## POWER MODULES (FAST RECOVERY)

## IRK... F 95

### FEATURES



- *Electrically isolated base plate.*
- *2500 $V_{RMS}$ isolating voltage.*
- *Simplified mechanical designs, rapid assembly.*
- *Large creepage distances.*
- *Aluminum Nitride*

## APPLICATIONS

# Antiparallel diode for high **frequency** switching devices

# Free wheeling diode in coverters and moter control circuit

# Inducitive heating and melting

# Uninterruptible power supplies (UPS)

# Ultrasonic cleaners and welders

### MAJOR RATINGS & CHARACTERISTICS

| Parameters | | IRKCF 95 | Units |
|---|---|---|---|
| $I_{F(AV)}$ | $T_C$ = 75 °C | 95 | A |
| $I_{F(RMS)}$ | | 141 | A |
| $I_{FSM}$ | @ 50 Hz | 1080 | A |
| $I^2t$ | @ 50 Hz | 5800 | $A^2s$ |
| t rr | | 250 | ns |
| $V_{RRM}$ | range | 400 to 600 | V |
| $T_J$ | range | -40 to 125 | °C |

IRK ... F 95

## ELECTRICAL SPECIFICATION

### VOLTAGE RATINGS

| Type Number | Voltage Code | $V_{RRM}$, max. repetitive peak reverse voltage V | $V_{RSM}$, max. non-repetitive peak reverse voltage V | $I_{RRM}$ max. mA |
|---|---|---|---|---|
| IRK F 95 | 04 | 400 | 500 | 35 |
| IRK F 95 | 06 | 600 | 700 | 35 |

### FORWARD CONDUCTION

| | Parameters | IRK F95 | Units | Conditions | |
|---|---|---|---|---|---|
| $I_{F(AV)}$ | Max. average forward current @ case temperature 75 °C | 95 | A | 180°C conduction, half sine wave | |
| $I_{F(RMS)}$ | Max. RMS forward current | 141 | A | | |
| $I_{FSM}$ | Max. peak, one cycle forward non-repetitive surge current | 1080 | A | t = 10ms | Sinusodial half wave, Initial $T_J = T_J$ max. |
| $I^2t$ | Maximum $I^2t$ for fusing | 5800 | $A^2s$ | t = 10ms | Sinusodial half wave, Initial $T_J = T_J$ max. |
| t rr<br>$I_{RM}$ | $I_F$ = 100 A Tj = 100 °C<br>$V_R$ = 300 V Tj = 25 °C<br>di/ dt = 200 A/ us Tj = 100 °C | 250<br>14<br>21 | ns<br>A | | |
| $V_{TO}$ | threshold voltage | 1.01 | V | | |
| $r_t$ | slope resistance | 2.85 | mΩ | | |
| $V_{FM}$ | Max. forward voltage drop | 2.05 | V | $I_f$ = 300A Tj = 125 °C | |

## IRK... F 95

### THERMAL AND MECHANICAL SPECIFICATIONS

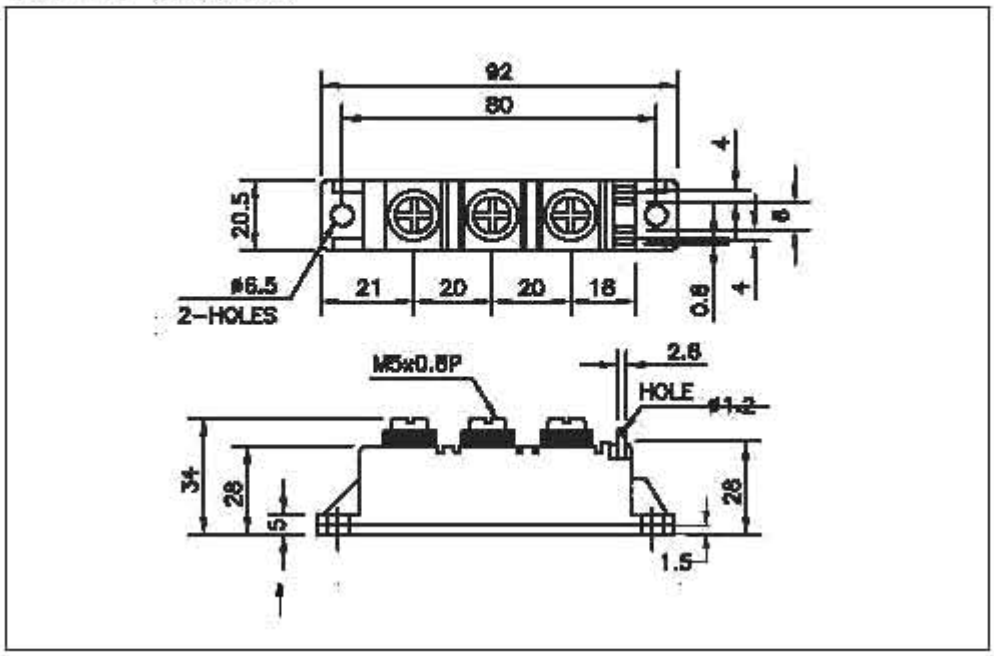
| | Parameter | | IRK F 95 | Units | Conditions |
|---|---|---|---|---|---|
| $T_J$ | Junction operating temperature | | -40 to 125 | °C | |
| $T_{stg}$ | Storage temperature range | | -40 to 150 | °C | |
| $R_{thJ-C}$ | Max. internal thermal resistance, junction to case | | 0.450 | K/W | DC operation |
| $R_{thC-S}$ | Thermal resistance, case to heatsink | | 0.550 | K/W | Mounting surface flat, smooth and greased |
| T | Mounting torque ±10% | Module to heatsink | 5 | Nm | A mounting compound is recommended and the torque should be rechecked after a period of about 3 hours to allow for the spread of the compound. |
| | | Busbar to module | 3 | Nm | |
| Wt | Approximate weight | | 115 | g | |

### BLOCKING

| | Parameters | IRK F 95 | Units | Conditions |
|---|---|---|---|---|
| $I_{RRM}$ | Max. peak reverse leakage current | 35 | mA | $T_J$ = 125 °C |
| $V_{INS}$ | RMS isolation voltage | 2500 | V | 50 Hz circuit to base, all terminals shorted, t 1min. |

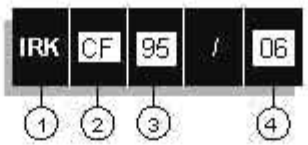
# POWER MODULES

## OUTLINE DIAGRAM




Ordering Information Table

Device Code




| | | |
|---|---|---|
| 1 | - | Module type |
| 2 | - | Circuit configuration (See Circuit Configuration Table) |
| 3 | - | Current code |
| 4 | - | Voltage code (See Voltage Ratings Table) |

Circuit Configurations Table