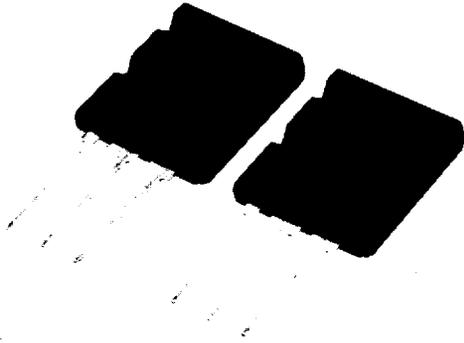


CT60AM-20

RESONANT INVERTER USE

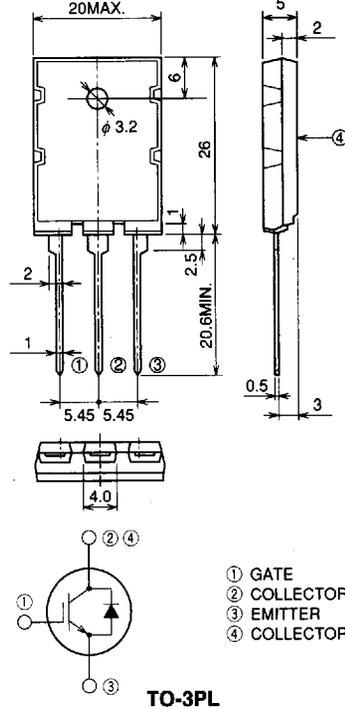
CT60AM-20



- VCES 1000V
- IC 60A
- Integrated Fast Recovery Diode

OUTLINE DRAWING

Dimensions in mm



APPLICATION

Microwave ovens, electromagnetic cooking devices, rice-cookers, voltage-resonant inverter circuit electric appliances.

MAXIMUM RATINGS (Tc = 25°C)

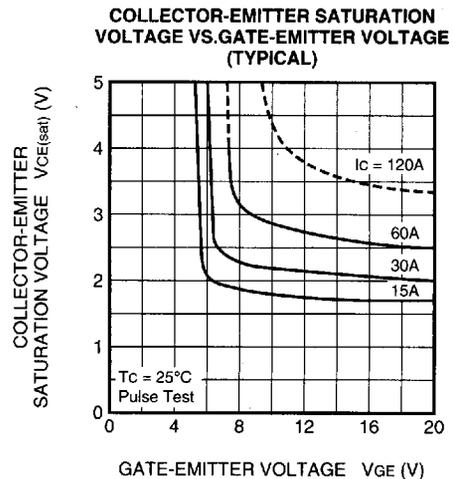
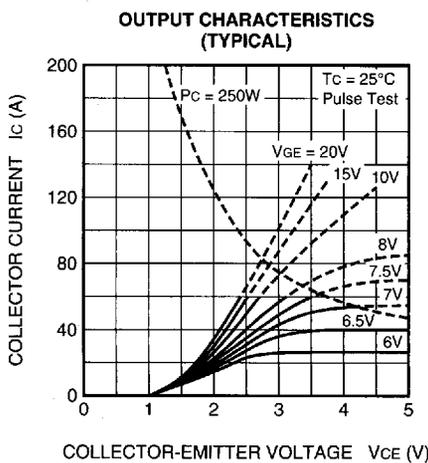
| Symbol | Parameter | Conditions | Ratings | Unit |
|------------------|----------------------------|---|------------|------|
| V _{CES} | Collector-emitter voltage | V _{GE} = 0V | 1000 | V |
| V _{GES} | Gate-emitter voltage | V _{CE} = 0V | ±20 | V |
| V _{GEM} | Peak gate-emitter voltage | V _{CE} = 0V, t _w = 0.5s | ±30 | V |
| I _C | Collector current | | 60 | A |
| I _{CM} | Collector current (Pulsed) | t _w = 1ms | 120 | A |
| I _E | Emitter current | | 40 | A |
| P _C | Maximum power dissipation | T _c = 25°C | 250 | W |
| T _j | Junction temperature | | -40 ~ +150 | °C |
| T _{stg} | Storage temperature | | -40 ~ +150 | °C |

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ELECTRICAL CHARACTERISTICS (Tj = 25°C unless otherwise noted)

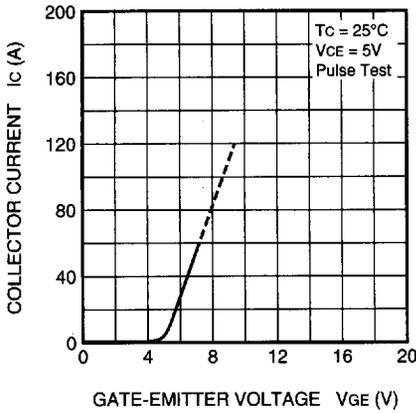
| Symbol | Parameter | Test conditions | Limits | | | Unit |
|-----------|--------------------------------------|---------------------------------|---------------------------|------|------|--------|
| | | | Min. | Typ. | Max. | |
| ICES | Collector current | VCE = 1000V, VGE = 0V | — | — | 1 | mA |
| IGES | Gate leakage current | VGE = ±20V, VCE = 0V | — | — | ±0.5 | μA |
| VGE(th) | Gate-emitter threshold voltage | VCE = 10V, IC = 6mA | 2.0 | — | 6.0 | V |
| VCE(sat) | Collector-emitter saturation voltage | IC = 60A, VCE = 15V | — | 2.6 | 3.5 | V |
| Cies | Input capacitance | VCE = 25V, VGE = 0V, f = 1MHz | — | 1950 | — | pF |
| Coēs | Output capacitance | | — | 170 | — | pF |
| Cres | Reverse transfer capacitance | | — | 65 | — | pF |
| td (on) | Turn-on delay time | | — | 0.04 | — | μs |
| tr | Fall time | | IC = 60A, Resistance load | — | 0.15 | — |
| td (off) | Turn-off delay time | VCC = 300V, VGE = 15V, RG = 25Ω | — | 0.30 | — | μs |
| tr | Rise time | | — | 0.30 | — | μs |
| Etail | Tail loss | ICP = 60A, Tj = 125°C, | — | 0.6 | 1.0 | mJ/pls |
| ICtail | Collector tail current | dv/dt = 200V/μs | — | 6 | 12 | A |
| VEC | Emitter-collector voltage | IE = 60A | — | — | 3 | V |
| Trr | Reverse recovery time | IE = 60A, di/dt = 20A/μs | — | 0.5 | 2 | μs |
| Rth (j-c) | Thermal resistance (IGBT part) | Junction to case | — | — | 0.5 | °C/W |
| Rth (j-c) | Thermal resistance | Junction to case | — | — | 4.0 | °C/W |

PERFORMANCE CURVES

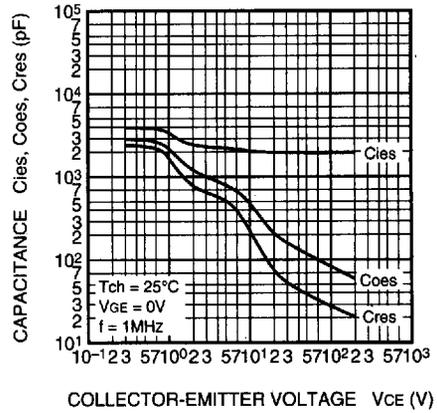


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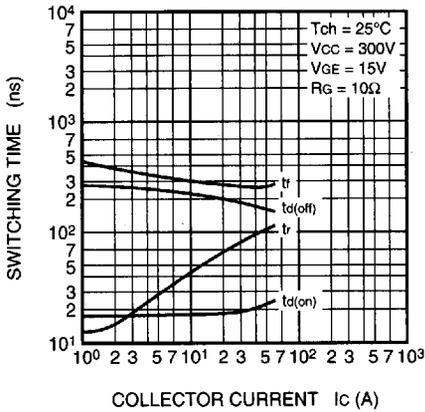
COLLECTOR CURRENT VS. GATE-EMITTER VOLTAGE (TYPICAL)



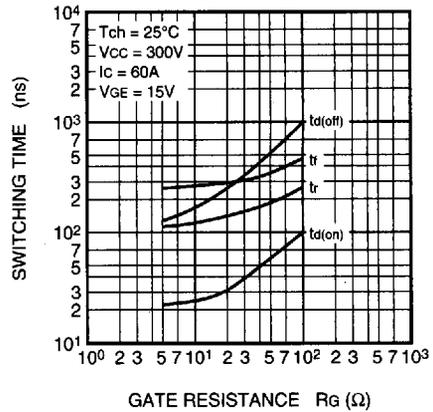
CAPACITANCE VS. COLLECTOR-EMITTER VOLTAGE (TYPICAL)



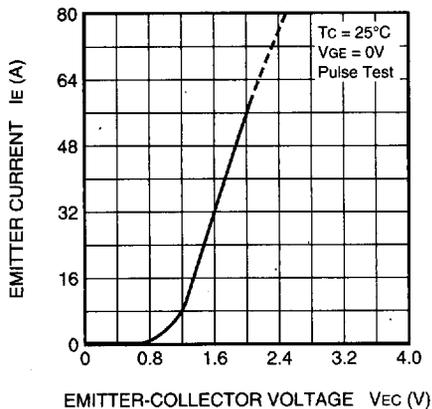
SWITCHING CHARACTERISTICS (TYPICAL)



SWITCHING TIME VS. GATE RESISTANCE (TYPICAL)



TRANSFER CHARACTERISTICS (TYPICAL)



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MITSUBISHI POWER MOSFET LEAD FORMING OUTLINE AND TAPING

LEAD FORMING

(1) TO-220 outline

Applicable device FS**UM-***A

| Standard outline | Standard forming outline | | | |
|---|--------------------------|----|----|-----------|
| | A5 | A6 | A8 | AA |
| | | | | |
| | | | | |
| Dimensions $a=3.0\pm 0.5$, $b=14.7\pm 0.5$, $c=5.0\pm 0.5$, $d=4.5\pm 0.5$, $e=20.1\pm 0.5$, $f=3.0\pm 0.5$, $g=15.5\pm 0.5$ $h=16.0\pm 0.5$, $i=5.5\pm 0.5$ ※Dimensions measured during processing | | | | Unit : mm |

(1) TO-220 full molded outline

Applicable device FS**KM-***A

| Standard outline | Standard forming outline | | | |
|---|--------------------------|----|----|-----------|
| | A5 | A6 | A8 | AA |
| | | | | |
| | | | | |
| Dimensions $a=3.0\pm 0.5$, $b=14.7\pm 0.5$, $c=5.0\pm 0.5$, $d=4.5\pm 0.5$, $e=20.1\pm 0.5$, $g=15.5\pm 0.5$, $h=16.0\pm 0.5$, $i=5.5\pm 0.5$, $j=19.0\pm 0.5$, $k=7.75\pm 0.5$, $l=4.0\pm 0.5$, $m=15.1\pm 0.5$, $n=16.5\pm 0.5$, $o=3.8\pm 0.35$ ※Dimensions measured during processing | | | | Unit : mm |

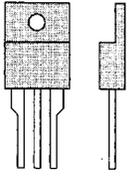
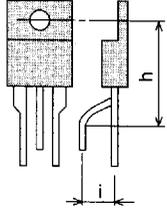
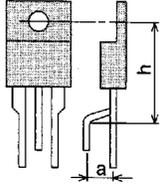
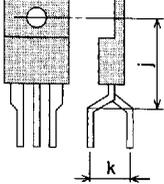
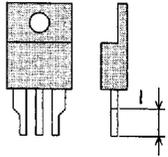
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MITSUBISHI POWER MOSFET

LEAD FORMING OUTLINE AND TAPING

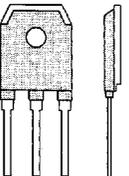
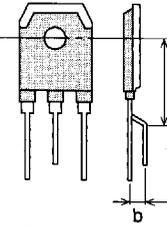
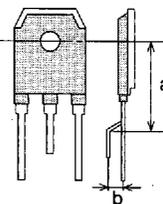
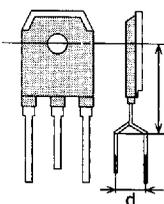
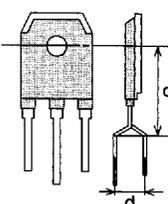
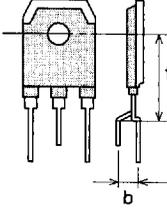
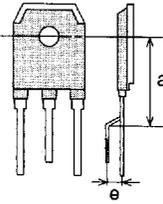
(2) TO-220 full molded outline

| | |
|-------------------|-------------|
| Applicable device | FS**KM-***A |
|-------------------|-------------|

| Standard outline | Standard forming outline | | | | |
|---|--|---|---|---|-----------|
| | AT | AU | AV | AW | |
|  |  |  |  |  | |
| Dimensions | a=3.0±0.5, b=14.7±0.5, c=5.0±0.5, d=4.5±0.5, e=20.1±0.5, g=15.5±0.5, h=16.0±0.5, i=5.5±0.5, j=19.0±0.5, k=7.75±0.5, l=4.0±0.5, m=15.1±0.5, n=16.5±0.5, o=3.8±0.35 ※Dimensions measured during processing | | | | Unit : mm |

(3) TO-3P outline

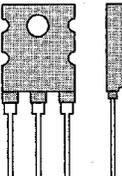
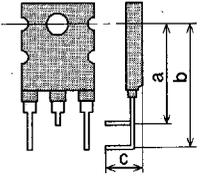
| | |
|-------------------|--------------------------|
| Applicable device | FS**SM-***A · CT**SM-*** |
|-------------------|--------------------------|

| Standard outline | Standard forming outline | | | | |
|--|---|---|--|--|-----------|
| | A7 | A8 | A9 | A8 | |
|  |  |  |  |  | |
| |  |  | | | |
| Dimensions | a=23.5, b=5.45, c=23, d=9.5, e=4, f=21.5 ※Dimensions measured during processing | | | | Unit : mm |

MITSUBISHI POWER MOSFET
LEAD FORMING OUTLINE AND TAPING

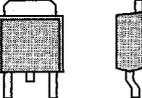
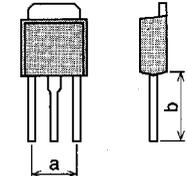
(4) TO-3PL outline

| | |
|-------------------|------------|
| Applicable device | CT**AM-*** |
|-------------------|------------|

| Standard outline | Standard forming outline AC | | |
|--|---|------------|--|
|  |  | Dimensions | $a=24\pm 0.5$ $b=31.5\pm 0.5$ $c=13.3\pm 0.6$ ※Dimensions measured during processing Unit : mm |

(5) MP-3 outline

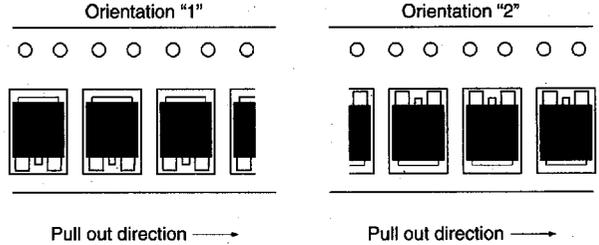
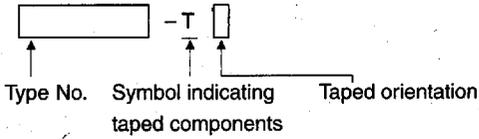
| | |
|-------------------|------------------------|
| Applicable device | FS**AS-**A · CT20A**·8 |
|-------------------|------------------------|

| Standard outline | Standard forming outline A1 | | |
|--|--|------------|---|
|  |  | Dimensions | $a=4.6$ $b=14\text{min.}$ ※Dimensions measured during processing Unit : mm |

LEAD FORMING OUTLINE AND TAPING

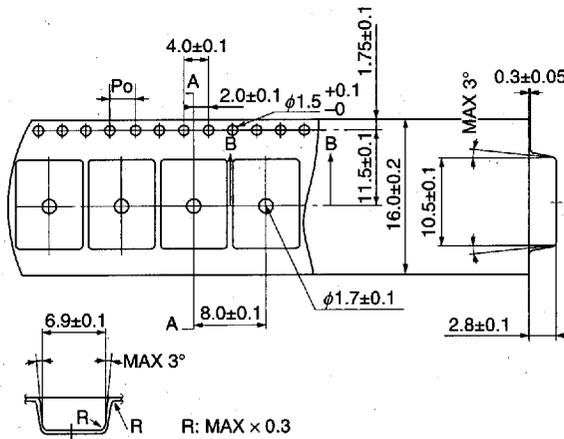
(2) MP-3

(a) Marking



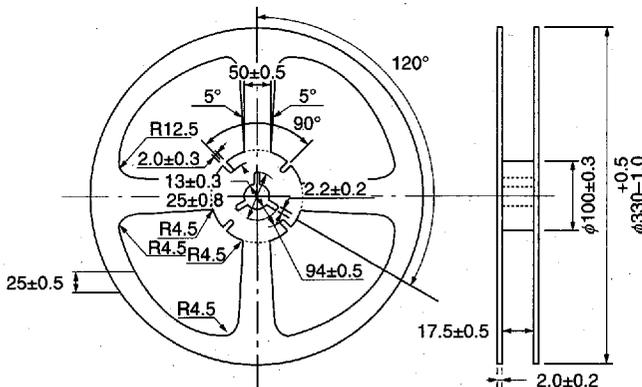
(b) Taping

• Tape shape and dimensions



Notice : The cumulative pitch error of Po (Free hole pitch) is $\pm 0.2\text{mm}$ per 10 pitches.

• Reel shape and dimensions

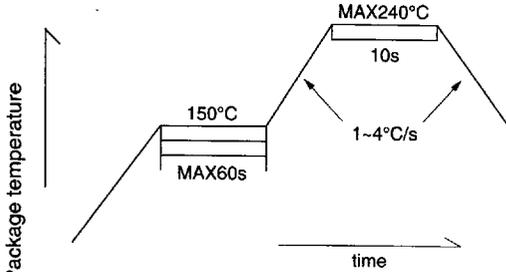


LEAD FORMING OUTLINE AND TAPING

Recommended conditions for surface mounting type

Outline : TO-220S, MP-3

- (1) Board : Alumina, Insulated metal board
- (2) Solder plate thickness : 150 μ m-250 μ m
- (3) Temperature profile

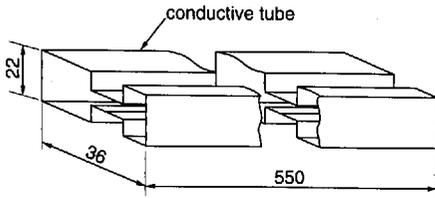


Infrared rays reflow temperature profile

Individual package for lead forming outline

- (1) TO-220, TO-220FN, TO-220C, TO-220S

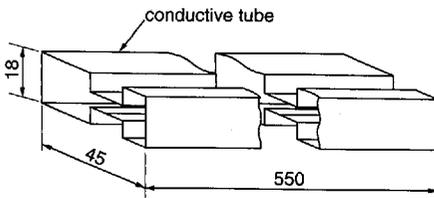
Dimensions in (Unit : mm)



The capacity is 50 p.c.s. (max.)

- (2) TO-3P

Dimensions in (Unit : mm)



The capacity is 30 p.c.s. (max.)