

|       |      |
|-------|------|
| $V_R$ | 650V |
| $I_F$ | 8A   |
| $Q_C$ | 13nC |

### ●Features

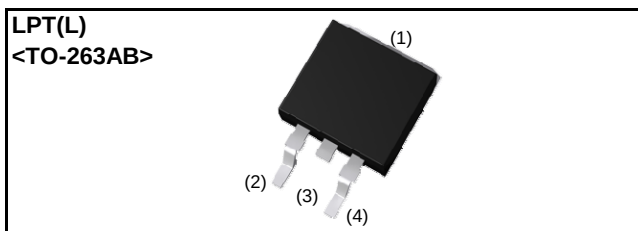
- 1) Shorter recovery time
- 2) Reduced temperature dependence
- 3) High-speed switching possible

### ●Construction

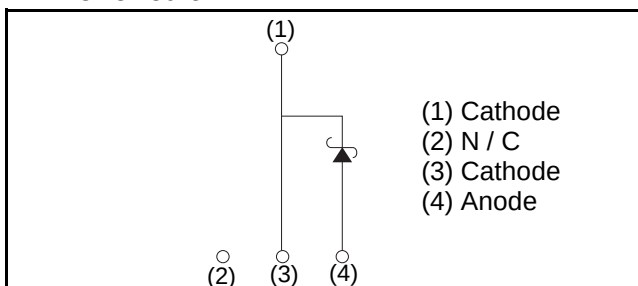
Silicon carbide epitaxial planer type

### ●AEC-Q101 Qualified

### ●Outline



### ●Inner circuit



### ●Packaging specifications

|      |                           |               |
|------|---------------------------|---------------|
| Type | Packaging                 | Embossed tape |
|      | Reel size (mm)            | 330           |
|      | Tape width (mm)           | 24            |
|      | Basic ordering unit (pcs) | 1,000         |
|      | Packing code              | TLL           |
|      | Marking                   | SCS208AJ      |

### ●Absolute maximum ratings ( $T_j = 25^\circ\text{C}$ )

| Parameter                           | Symbol    | Value             | Unit |
|-------------------------------------|-----------|-------------------|------|
| Reverse voltage (repetitive peak)   | $V_{RM}$  | 650               | V    |
| Reverse voltage (DC)                | $V_R$     | 650               | V    |
| Continuous forward current          | $I_F$     | 8 <sup>*1</sup>   | A    |
| Surge no repetitive forward current | $I_{FSM}$ | 31 <sup>*2</sup>  | A    |
|                                     |           | 118 <sup>*3</sup> | A    |
|                                     |           | 25 <sup>*4</sup>  | A    |
| Repetitive peak forward current     | $I_{FRM}$ | 32 <sup>*5</sup>  | A    |
| Total power dissipation             | $P_D$     | 62 <sup>*6</sup>  | W    |
| Junction temperature                | $T_j$     | 175               | °C   |
| Range of storage temperature        | $T_{stg}$ | -55 to +175       | °C   |

\*1  $T_c=134^\circ\text{C}$  \*2  $PW=8.3\text{ms}$  sinusoidal,  $T_j=25^\circ\text{C}$

\*3  $PW=10\mu\text{s}$  square,  $T_j=25^\circ\text{C}$  \*4  $PW=8.3\text{ms}$  sinusoidal,  $T_j=150^\circ\text{C}$

\*5  $T_c=100^\circ\text{C}$ ,  $T_j=150^\circ\text{C}$ , Duty cycle=10% \*6  $T_c=25^\circ\text{C}$

**●Electrical characteristics (T<sub>j</sub> = 25°C)**

| Parameter               | Symbol          | Conditions                                  | Values |      |      | Unit |
|-------------------------|-----------------|---------------------------------------------|--------|------|------|------|
|                         |                 |                                             | Min.   | Typ. | Max. |      |
| DC blocking voltage     | V <sub>DC</sub> | I <sub>R</sub> =0.16mA                      | 600    | -    | -    | V    |
| Forward voltage         | V <sub>F</sub>  | I <sub>F</sub> =8A, T <sub>j</sub> =25°C    | -      | 1.35 | 1.55 | V    |
|                         |                 | I <sub>F</sub> =8A, T <sub>j</sub> =150°C   | -      | 1.55 | -    | V    |
|                         |                 | I <sub>F</sub> =8A, T <sub>j</sub> =175°C   | -      | 1.63 | -    | V    |
| Reverse current         | I <sub>R</sub>  | V <sub>R</sub> =600V, T <sub>j</sub> =25°C  | -      | 1.6  | 160  | μA   |
|                         |                 | V <sub>R</sub> =600V, T <sub>j</sub> =150°C | -      | 24   | -    | μA   |
|                         |                 | V <sub>R</sub> =600V, T <sub>j</sub> =175°C | -      | 56   | -    | μA   |
| Total capacitance       | C               | V <sub>R</sub> =1V, f=1MHz                  | -      | 291  | -    | pF   |
|                         |                 | V <sub>R</sub> =600V, f=1MHz                | -      | 30   | -    | pF   |
| Total capacitive charge | Q <sub>c</sub>  | V <sub>R</sub> =400V, di/dt=350A/μs         | -      | 13   | -    | nC   |
| Switching time          | t <sub>c</sub>  | V <sub>R</sub> =400V, di/dt=350A/μs         | -      | 13   | -    | ns   |

**●Thermal characteristics**

| Parameter          | Symbol               | Conditions | Min. | Typ. | Max. | Unit |
|--------------------|----------------------|------------|------|------|------|------|
| Thermal resistance | R <sub>th(j-c)</sub> | -          | -    | 1.8  | 2.4  | °C/W |

●Electrical characteristic curves

Fig.1  $V_F - I_F$  Characteristics

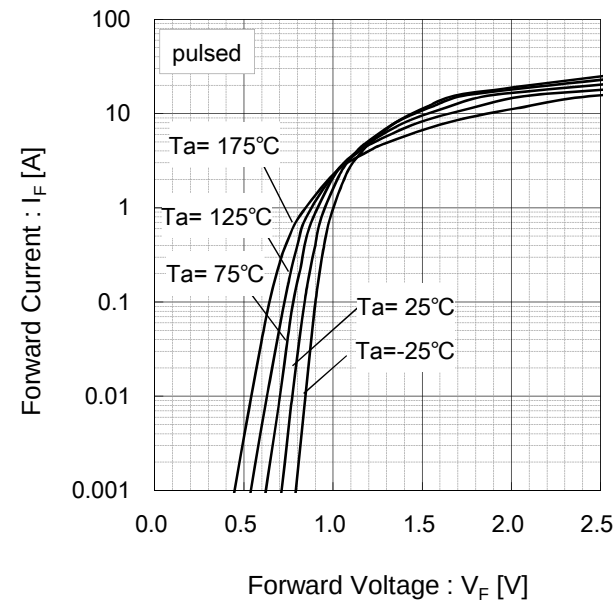


Fig.2  $V_F - I_F$  Characteristics

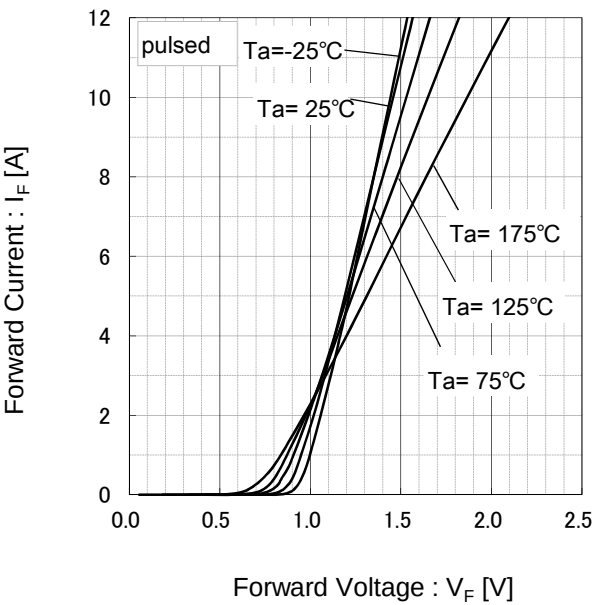


Fig.3  $V_R - I_R$  Characteristics

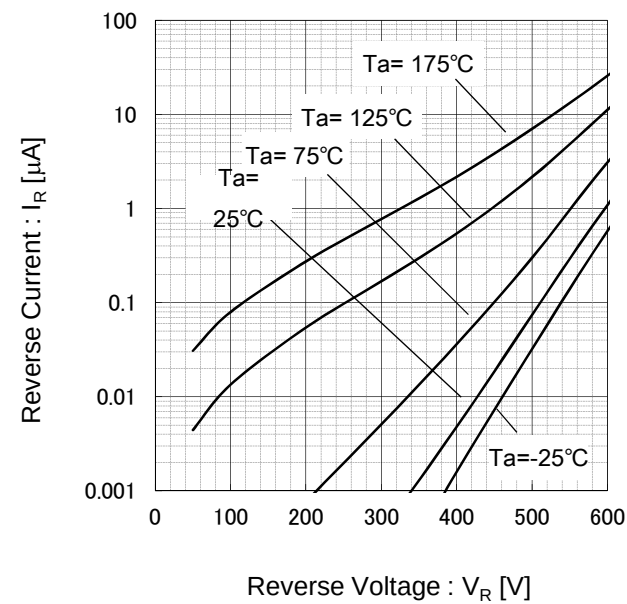
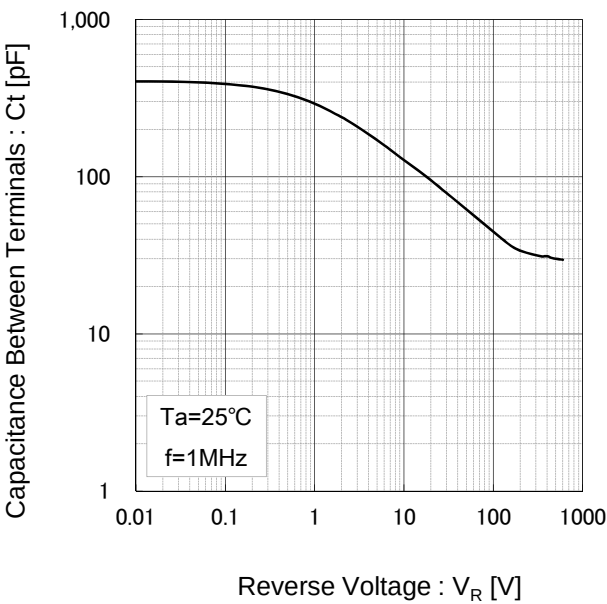


Fig.4  $V_R - C_t$  Characteristics



# ●Electrical characteristic curves

Fig.5 Thermal Resistance vs. Pulse Width

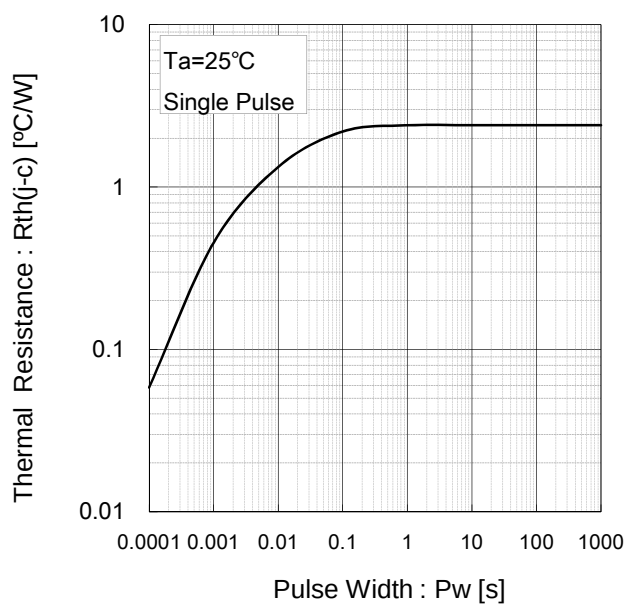
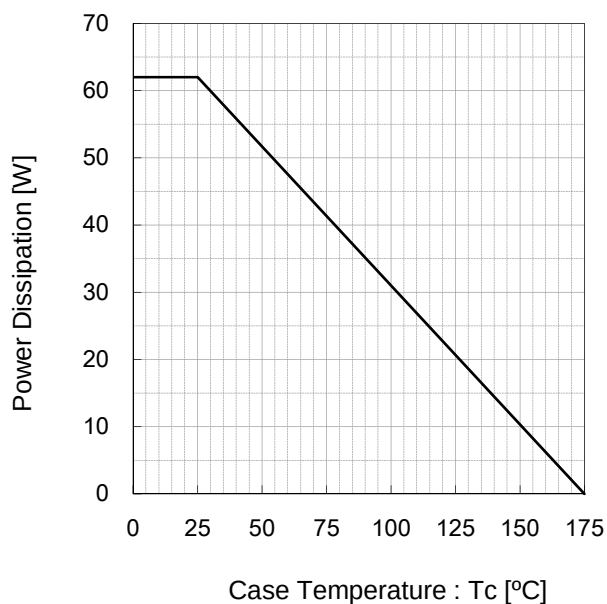
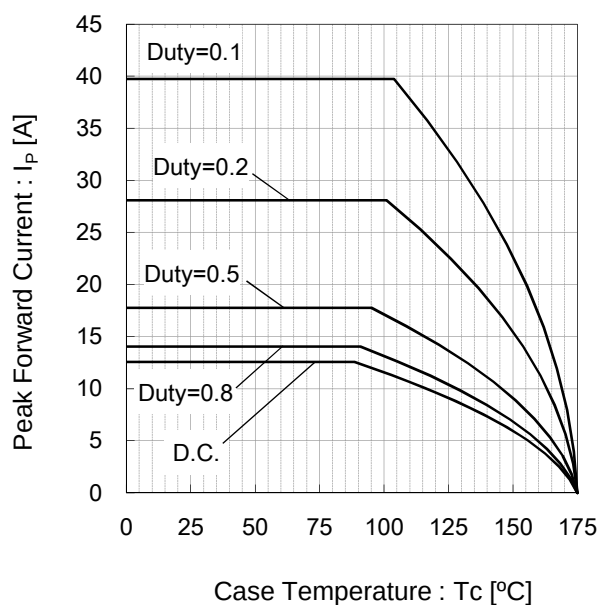
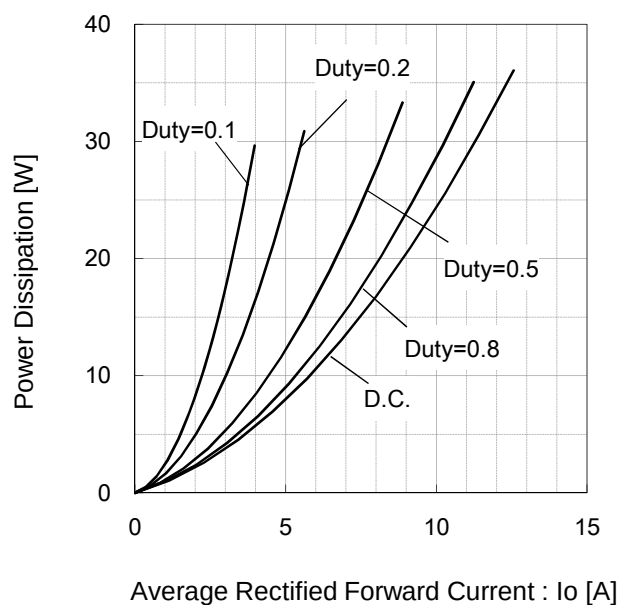


Fig.6 Power Dissipation

Fig.7 Derating Curve  $I_p$ - $T_c$ Fig.8  $I_o$ - $P_f$  Characteristics

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