

## isc N-Channel MOSFET Transistor

## TK56A12N1, ITK56A12N1

## • FEATURES

- Low drain-source on-resistance:  
 $R_{DS(ON)} = 7.5\text{m}\Omega$  ( $V_{GS} = 10\text{ V}$ )
- Enhancement mode:  
 $V_{th} = 2.0\text{ to }4.0\text{ V}$  ( $V_{DS} = 10\text{ V}$ ,  $I_D = 1.0\text{ mA}$ )
- 100% avalanche tested
- Minimum Lot-to-Lot variations for robust device performance and reliable operation

## • DESCRIPTION

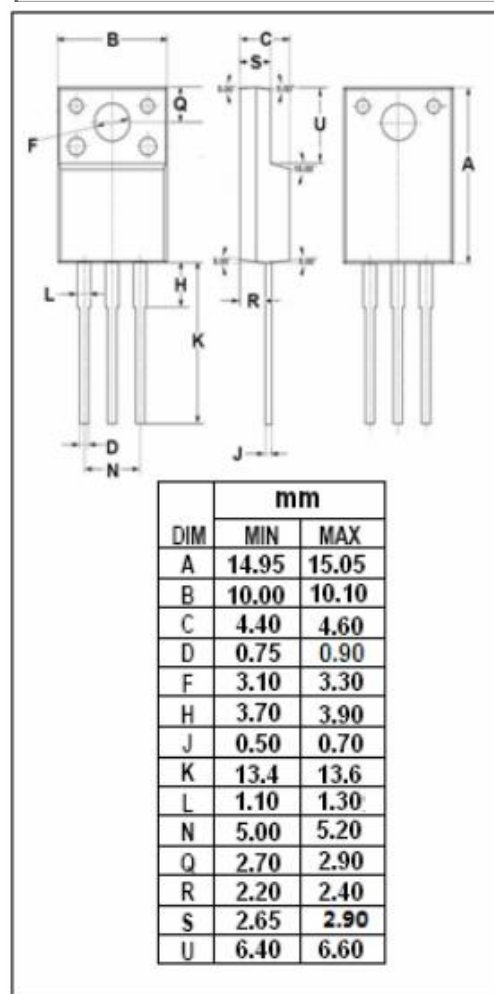
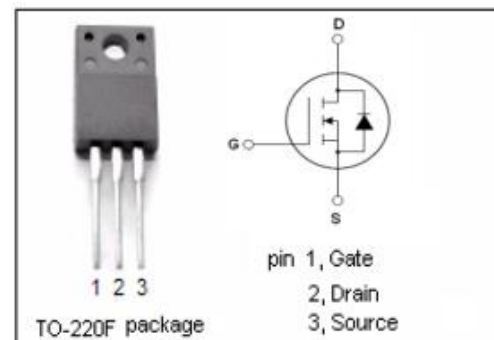
- Switching Voltage Regulators

• ABSOLUTE MAXIMUM RATINGS( $T_a = 25^\circ\text{C}$ )

| SYMBOL    | PARAMETER                                    | VALUE    | UNIT             |
|-----------|----------------------------------------------|----------|------------------|
| $V_{DS}$  | Drain-Source Voltage                         | 120      | V                |
| $V_{GS}$  | Gate-Source Voltage                          | $\pm 20$ | V                |
| $I_D$     | Drain Current-Continuous                     | 56       | A                |
| $I_{DM}$  | Drain Current-Single Pulsed                  | 210      | A                |
| $P_D$     | Total Dissipation @ $T_c = 25^\circ\text{C}$ | 45       | W                |
| $T_j$     | Max. Operating Junction Temperature          | 150      | $^\circ\text{C}$ |
| $T_{stg}$ | Storage Temperature                          | -55~150  | $^\circ\text{C}$ |

## • THERMAL CHARACTERISTICS

| SYMBOL         | PARAMETER                             | MAX  | UNIT               |
|----------------|---------------------------------------|------|--------------------|
| $R_{th(ch-c)}$ | Channel-to-case thermal resistance    | 2.77 | $^\circ\text{C/W}$ |
| $R_{th(ch-a)}$ | Channel-to-ambient thermal resistance | 62.5 | $^\circ\text{C/W}$ |



**Isc N-Channel MOSFET Transistor****TK56A12N1, ITK56A12N1****ELECTRICAL CHARACTERISTICS****T<sub>C</sub>=25°C unless otherwise specified**

| SYMBOL              | PARAMETER                      | CONDITIONS                                   | MIN | TYP | MAX  | UNIT |
|---------------------|--------------------------------|----------------------------------------------|-----|-----|------|------|
| BV <sub>DSS</sub>   | Drain-Source Breakdown Voltage | V <sub>GS</sub> =0V; I <sub>D</sub> = 10mA   | 120 |     |      | V    |
| V <sub>GS(th)</sub> | Gate Threshold Voltage         | V <sub>DS</sub> = 10V; I <sub>D</sub> =1.0mA | 2.0 |     | 4.0  | V    |
| R <sub>DS(on)</sub> | Drain-Source On-Resistance     | V <sub>GS</sub> =10V; I <sub>D</sub> =28A    |     |     | 7.5  | mΩ   |
| I <sub>GSS</sub>    | Gate-Source Leakage Current    | V <sub>GS</sub> = ±20V; V <sub>DS</sub> = 0V |     |     | ±0.1 | μA   |
| I <sub>DSS</sub>    | Drain-Source Leakage Current   | V <sub>DS</sub> = 120V; V <sub>GS</sub> = 0V |     |     | 10   | μA   |
| V <sub>SDF</sub>    | Diode forward voltage          | I <sub>DR</sub> =56A, V <sub>GS</sub> = 0 V  |     |     | 1.2  | V    |

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