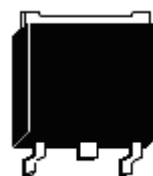


N-Channel Enhancement Mode Power MOSFET

Features:

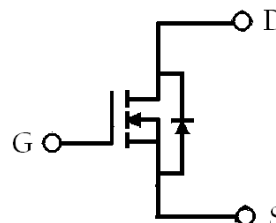
- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

TO-252(DPAK)



G D S

| | |
|---|--------------------|
| BV_{DSS} | 150V |
| I_D@T_C=25°C, V_{GS}=10V | 28A |
| R_{DS(ON)}@V_{GS}=10V, I_D=20A | 39 mΩ (typ) |
| R_{DS(ON)}@V_{GS}=7V, I_D=10A | 39 mΩ (typ) |



G : Gate D : Drain S : Source

Ordering Information

| Device | Package | Shipping |
|---------|--|------------------------|
| KJ50N15 | TO-252 (Pb-free lead plating package) | 2500 pcs / Tape & Reel |

Absolute Maximum Ratings (T_C=25°C)

| Parameter | Symbol | Limits | Unit | |
|---|-----------------------------------|------------------|------|----|
| Drain-Source Voltage (Note 1) | V _{DS} | 150 | V | |
| Gate-Source Voltage | V _{GS} | ±30 | | |
| Continuous Drain Current @ T _C =25°C, V _{GS} =10V (Note 1) | I _D | 28 | A | |
| Continuous Drain Current @ T _C =100°C, V _{GS} =10V (Note 1) | | 20 | | |
| Continuous Drain Current @ T _A =25°C, V _{GS} =10V (Note 4) | I _{DSM} | 3.3 | | |
| Continuous Drain Current @ T _A =70°C, V _{GS} =10V (Note 4) | | 2.6 | | |
| Pulsed Drain Current @ V _{GS} =10V (Note 3) | I _{DM} | 100 | | |
| Avalanche Current (Note 3) | I _{AS} | 10 | | |
| Single Pulse Avalanche Energy @ L=0.2mH, I _D =10 Amps, V _{DD} =50V (Note 2) | E _{AS} | 10 | | mJ |
| Power Dissipation | T _C =25°C (Note 1) | P _D | 100 | W |
| | T _C =100°C (Note 1) | | 50 | |
| | T _A =25°C (Note 2) | P _{DSM} | 2 | |
| | T _A =70°C (Note 2) | | 1.3 | |
| Operating Junction and Storage Temperature | T _J , T _{stg} | -55~+175 | °C/W | |

*Drain current limited by maximum junction temperature

Thermal Data

| Parameter | Symbol | Value | Unit |
|--|---------------------|-------|------|
| Thermal Resistance, Junction-to-case, max | R _{th,j-c} | 1.5 | °C/W |
| Thermal Resistance, Junction-to-ambient, max (Note2) | R _{th,j-a} | 62.5 | |
| Thermal Resistance, Junction-to-ambient, max (Note4) | | 90 | |

Note : 1. The power dissipation P_D is based on T_{J(MAX)}=175 °C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

2. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2 oz. copper, in a still air environment with T_A=25 °C. The power dissipation P_{DSM} is based on R_{θJA} and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

3. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=175 °C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

4. When mounted on the minimum pad size recommended (PCB mount), t≤10s.

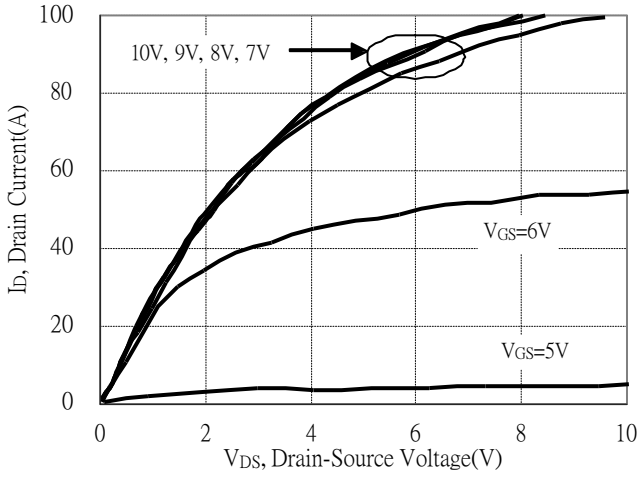
Characteristics (T_j=25°C, unless otherwise specified)

| Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|-------------------------------------|------|------|------|------|--|
| Static | | | | | |
| BV _{DSS} | 150 | - | - | V | V _{GS} =0V, I _D =250μA |
| ΔBV _{DSS} /ΔT _j | - | 0.1 | - | V/°C | Reference to 25°C, I _D =250μA |
| V _{GS(th)} | 2.0 | 3.5 | 4.0 | V | V _{DS} = V _{GS} , I _D =250μA |
| *G _{FS} | - | 30 | - | S | V _{DS} =5V, I _D =20A |
| I _{GSS} | - | - | ±100 | nA | V _{GS} =±30V |
| I _{DSS} | - | - | 1 | μA | V _{DS} =120V, V _{GS} =0V |
| | - | - | 25 | | V _{DS} =120V, V _{GS} =0V, T _j =125°C |
| *R _{DS(ON)} | - | 39 | 50 | mΩ | V _{GS} =10V, I _D =20A |
| | - | 39 | 55 | | V _{GS} =7V, I _D =10A |
| Dynamic | | | | | |
| *Q _g | - | 43 | - | nC | I _D =20A, V _{DS} =80V, V _{GS} =10V |
| *Q _{gs} | - | 10 | - | | |
| *Q _{gd} | - | 14 | - | | |
| *t _{d(ON)} | - | 18 | - | ns | V _{DS} =75V, I _D =1A, V _{GS} =10V, R _G =6Ω |
| *t _r | - | 13 | - | | |
| *t _{d(OFF)} | - | 50 | - | | |
| *t _f | - | 22 | - | | |
| C _{iss} | - | 1763 | - | pF | V _{GS} =0V, V _{DS} =25V, f=1MHz |
| C _{oss} | - | 170 | - | | |
| C _{rss} | - | 90 | - | | |
| R _g | - | 2 | - | Ω | V _{GS} =15mV, V _{DS} =0V, f=1MHz |
| Source-Drain Diode | | | | | |
| *I _S | - | - | 28 | A | |
| *I _{SM} | - | - | 100 | | |
| *V _{SD} | - | 0.79 | 1.2 | V | I _S =20A, V _{GS} =0V |
| *t _{rr} | - | 100 | - | ns | V _{GS} =0V, I _F =20A, dI _F /dt=100A/μs |
| *Q _{rr} | - | 340 | - | nC | |

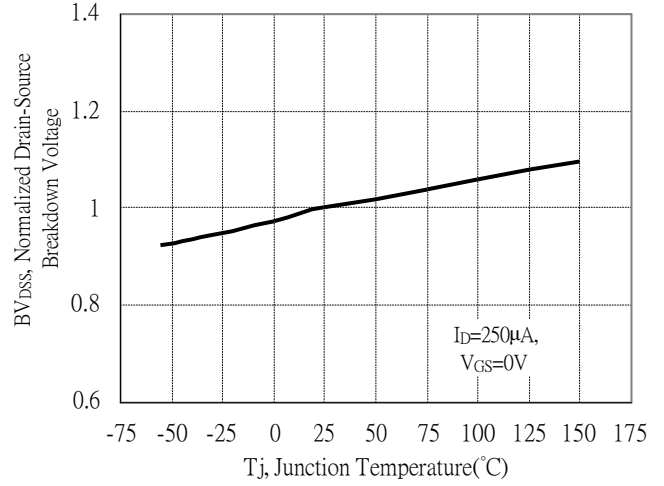
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

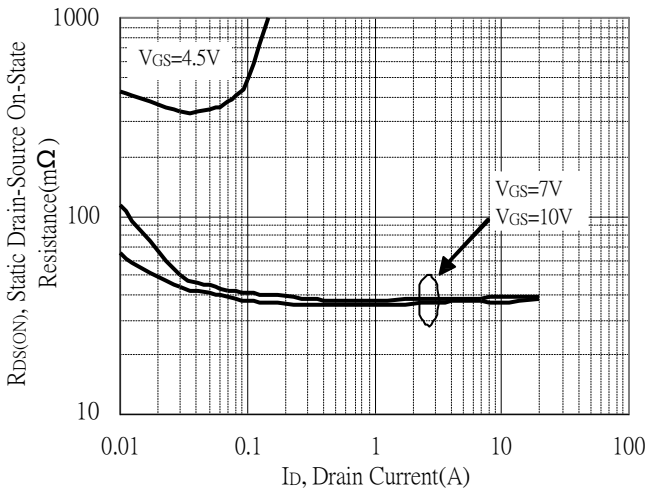
Typical Output Characteristics



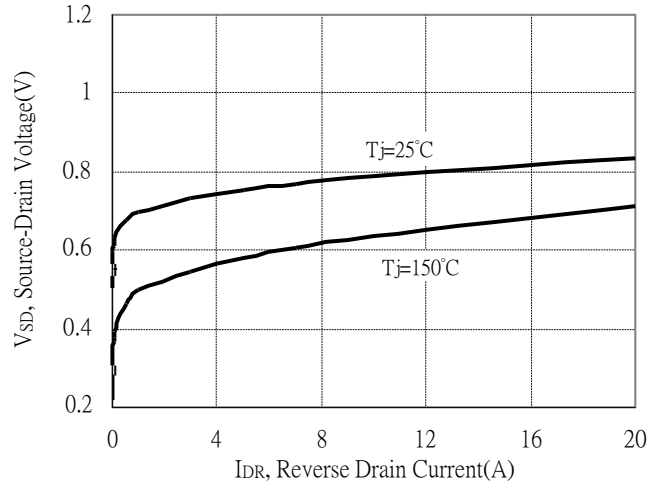
Breakdown Voltage vs Ambient Temperature



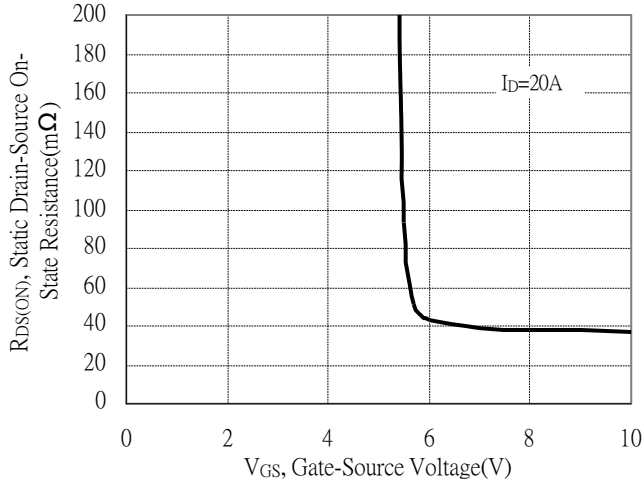
Static Drain-Source On-State resistance vs Drain Current



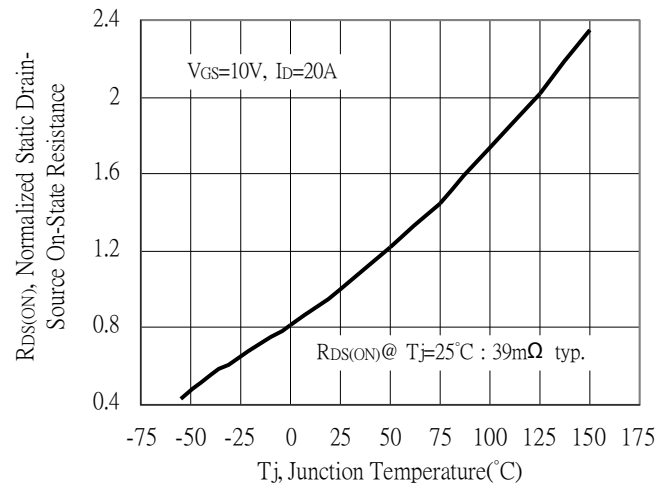
Reverse Drain Current vs Source-Drain Voltage



Static Drain-Source On-State Resistance vs Gate-Source Voltage

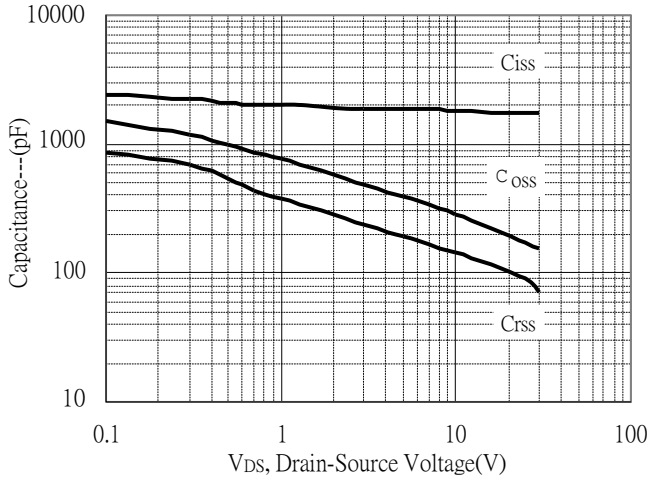


Drain-Source On-State Resistance vs Junction Temperature

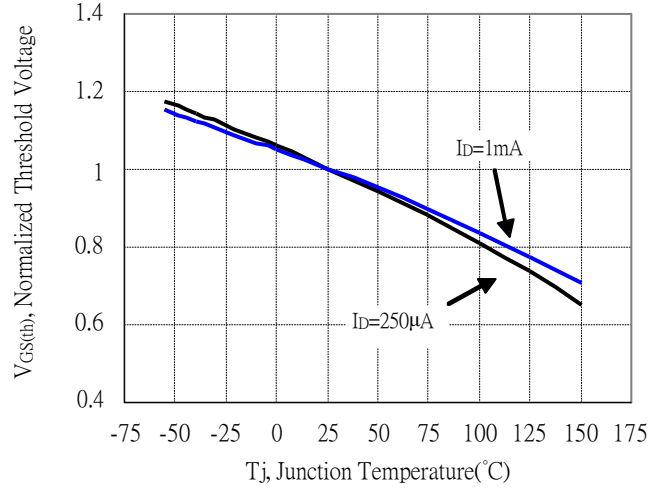


Typical Characteristics(Cont.)

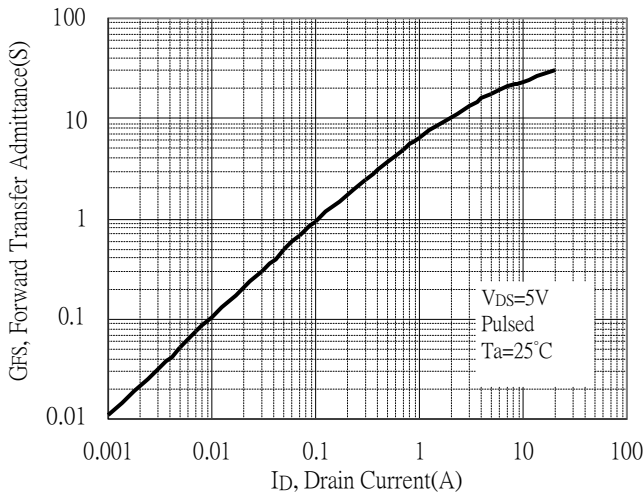
Capacitance vs Drain-to-Source Voltage



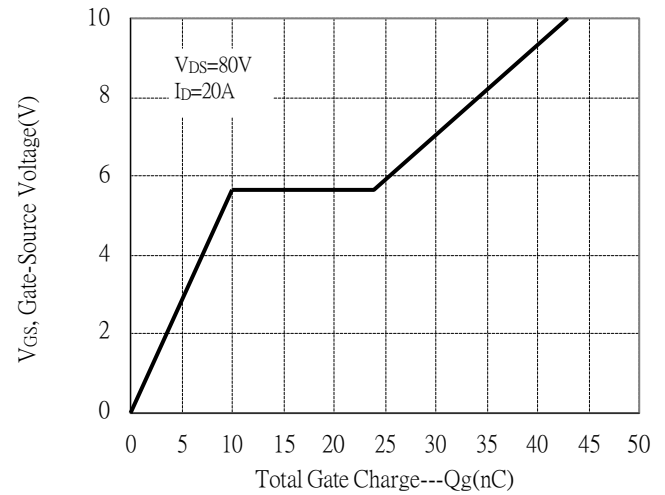
Normalized Threshold Voltage vs Junction Temperature



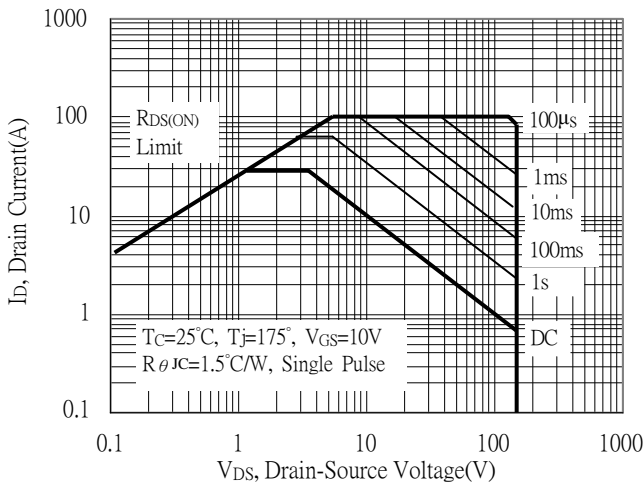
Forward Transfer Admittance vs Drain Current



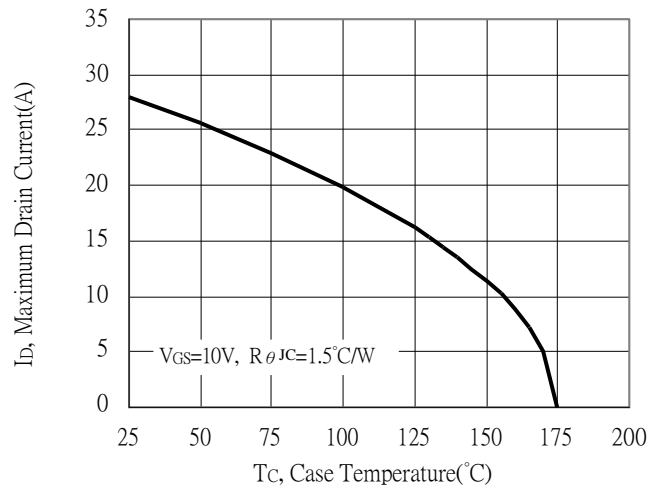
Gate Charge Characteristics



Maximum Safe Operating Area

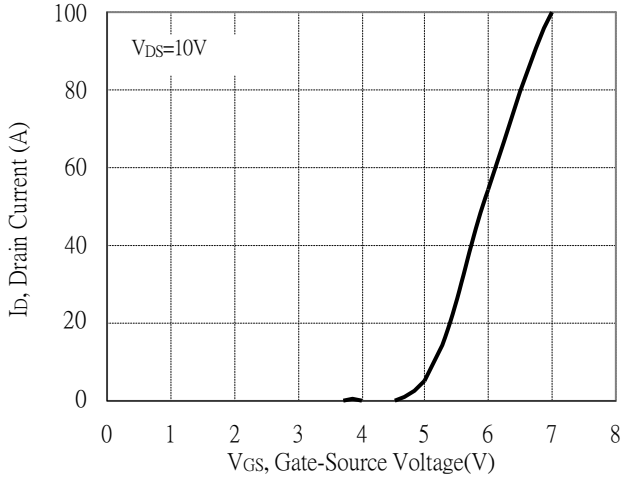


Maximum Drain Current vs Case Temperature

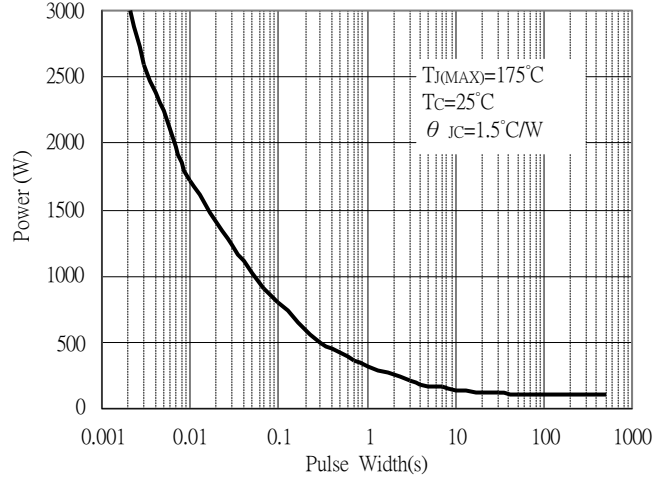


Typical Characteristics(Cont.)

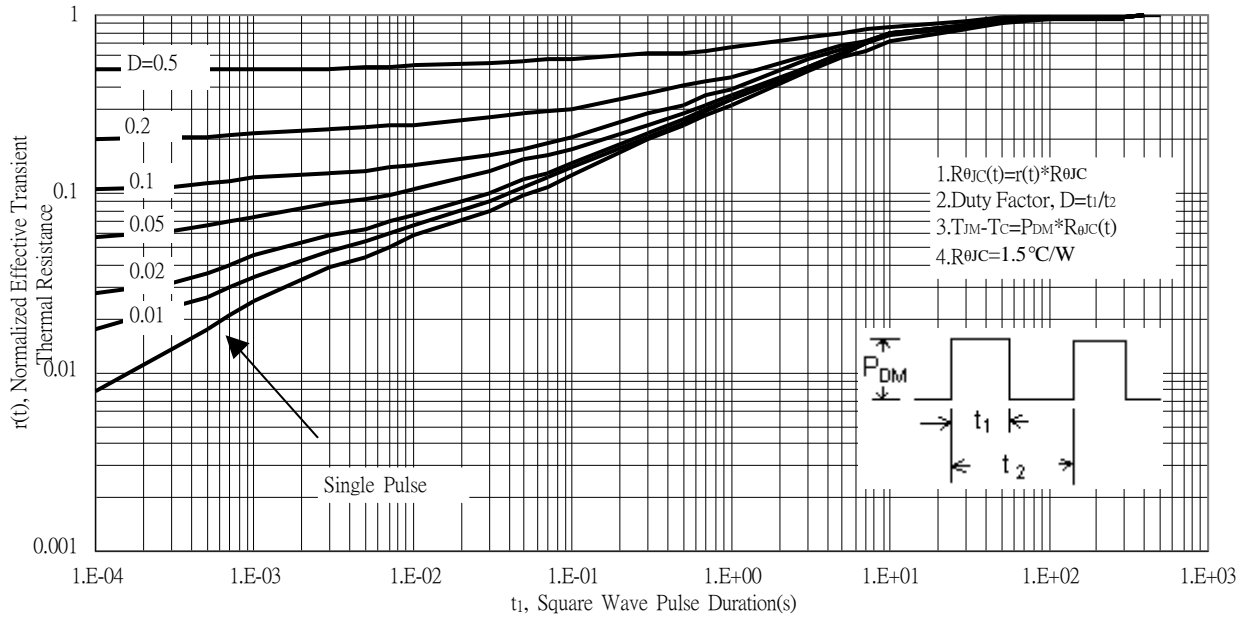
Typical Transfer Characteristics



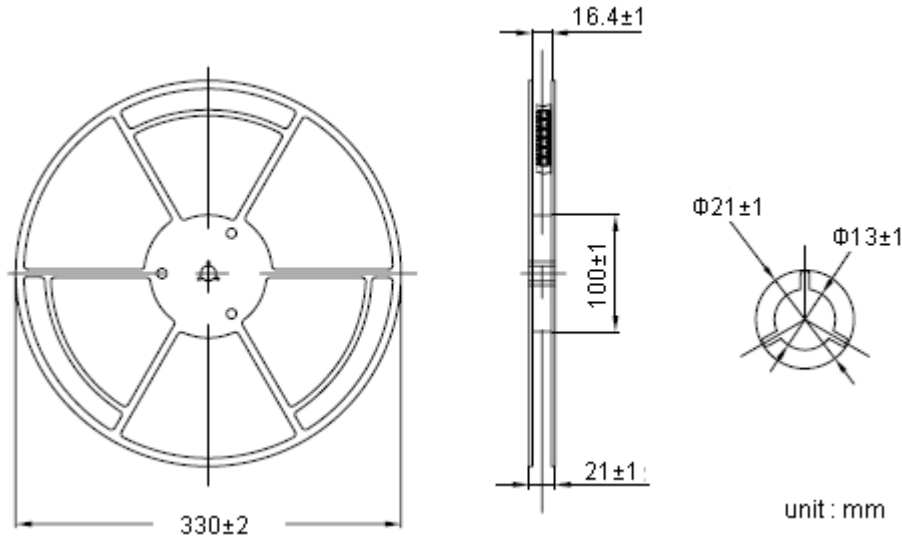
Single Pulse Maximum Power Dissipation



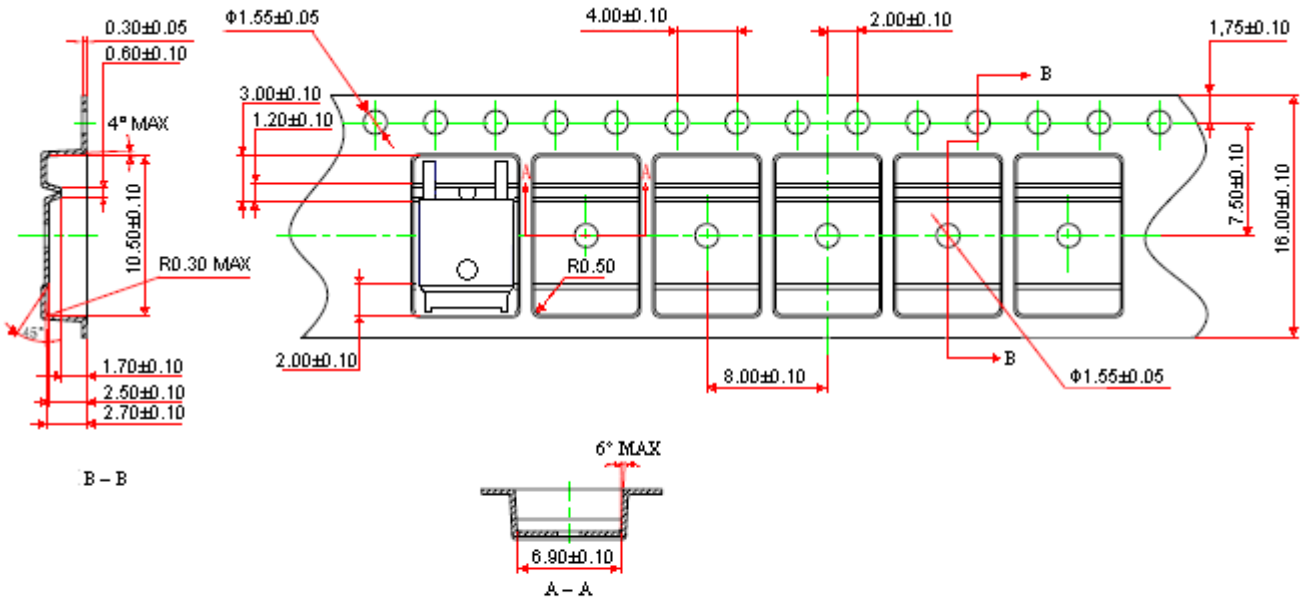
Transient Thermal Response Curves



Reel Dimension



Carrier Tape Dimension

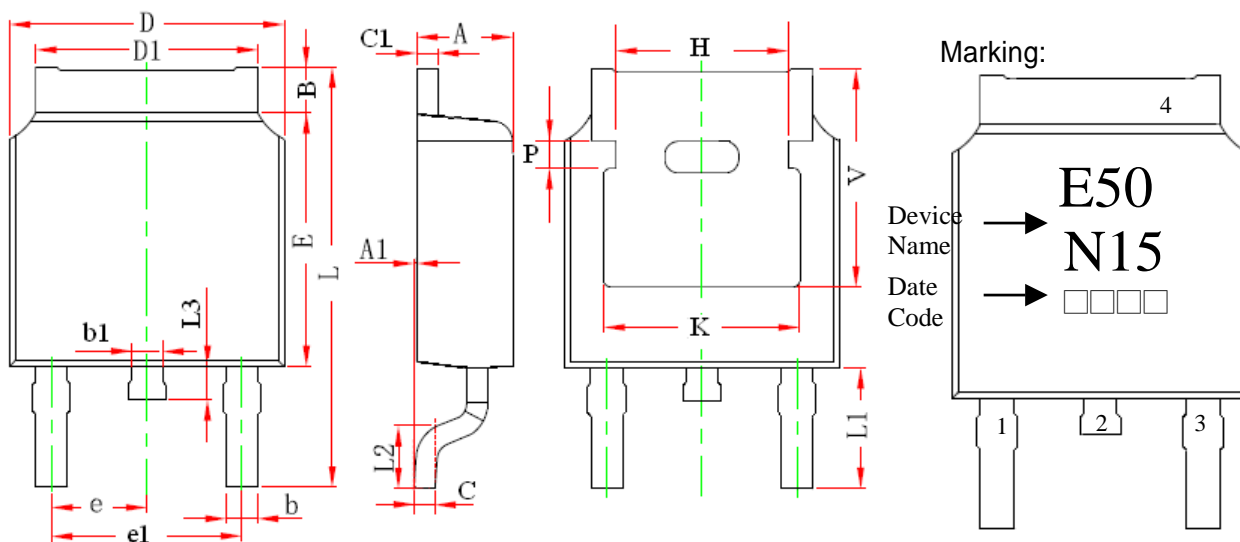


Notes:

1. 10 sprocket hole pitch cumulative tolerance ± 0.2 .
2. Camber not to exceed 1mm in 100mm.
3. Material: conductive black polystyrene, antistatic coated : $10 \frac{5}{\Omega/\square} \sim 10 \frac{11}{\Omega/\square}$

unit : mm

TO-252 Dimension



3-Lead TO-252 Plastic Surface Mount Package
 Package Code: J3

Style: Pin 1.Gate 2.Drain 3.Source
 4.Drain

Date Code(counting from left to right) :
 1st code: year code, the last digit of Christian year
 2nd code : month code, Jan→A, Feb→B, Mar→C, Apr→D
 May→E, Jun→F, Jul→G, Aug→H, Sep→J, Oct
 →K, Nov→L, Dec→M
 3rd and 4th codes : prodcution serial number, 01~99

| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|-------|-------------|-------|-----|--------|-------|-------------|--------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.087 | 0.094 | 2.200 | 2.400 | e | 0.086 | 0.094 | 2.186 | 2.386 |
| A1 | 0.000 | 0.005 | 0.000 | 0.127 | e1 | 0.172 | 0.188 | 4.372 | 4.772 |
| B | 0.039 | 0.048 | 0.990 | 1.210 | H | 0.163 | REF | 4.140 | REF |
| b | 0.026 | 0.034 | 0.660 | 0.860 | K | 0.190 | REF | 4.830 | REF |
| b1 | 0.026 | 0.034 | 0.660 | 0.860 | L | 0.386 | 0.409 | 9.800 | 10.400 |
| C | 0.018 | 0.023 | 0.460 | 0.580 | L1 | 0.114 | REF | 2.900 | REF |
| C1 | 0.018 | 0.023 | 0.460 | 0.580 | L2 | 0.055 | 0.067 | 1.400 | 1.700 |
| D | 0.256 | 0.264 | 6.500 | 6.700 | L3 | 0.024 | 0.039 | 0.600 | 1.000 |
| D1 | 0.201 | 0.215 | 5.100 | 5.460 | P | 0.026 | REF | 0.650 | REF |
| E | 0.236 | 0.244 | 6.000 | 6.200 | V | 0.211 | REF | 5.350 | REF |