

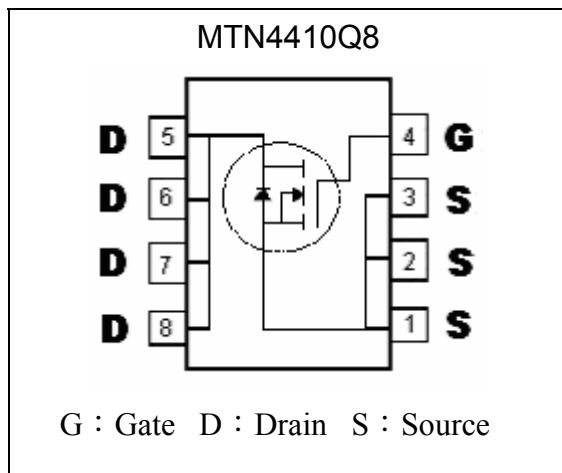
N-Channel Enhancement Mode Power MOSFET

MTN4410Q8

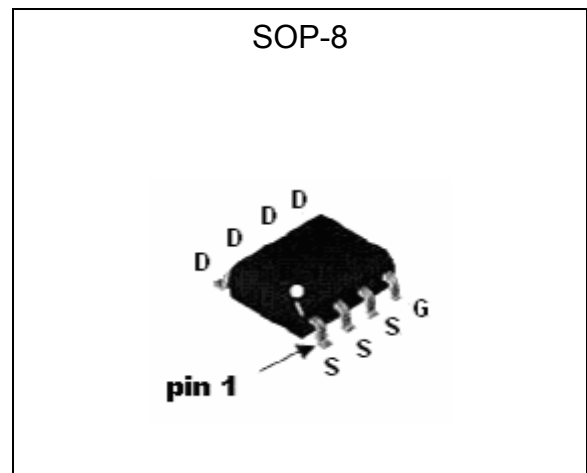
Features

- Single Drive Requirement
- Low On-resistance
- Fast Switching Characteristic
- Dynamic dv/dt rating
- Repetitive Avalanche Rated
- Pb-free lead plating and halogen-free package

Symbol

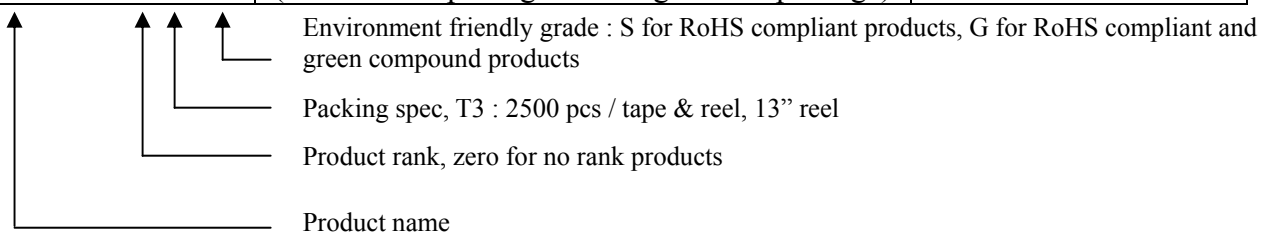


Outline



Ordering Information

| Device | Package | Shipping |
|------------------|--|------------------------|
| MTN4410Q8-0-T3-G | SOP-8 (Pb-free lead plating and halogen-free package) | 2500 pcs / Tape & Reel |





Absolute Maximum Ratings (Ta=25°C)

| Parameter | Symbol | Limits | Unit |
|--|-----------------------------------|----------|------|
| Drain-Source Voltage | V _{DS} | 30 | V |
| Gate-Source Voltage | V _{GS} | ±20 | V |
| Continuous Drain Current @V _{GS} =10V, T _A =25°C | I _D | 12 | A |
| Continuous Drain Current @V _{GS} =10V, T _A =70°C | I _D | 9.6 | A |
| Pulsed Drain Current | I _{DM} | 50 *1 | A |
| Total Power Dissipation | P _D | 2.5 | W |
| Linear Derating Factor | | 0.02 | W/°C |
| Thermal Resistance, Junction-to-ambient, max | R _{th,j-a} | 50 | °C/W |
| Operating Junction and Storage Temperature | T _j , T _{stg} | -55~+150 | °C |

Note : *1. Pulse width limited by safe operating area

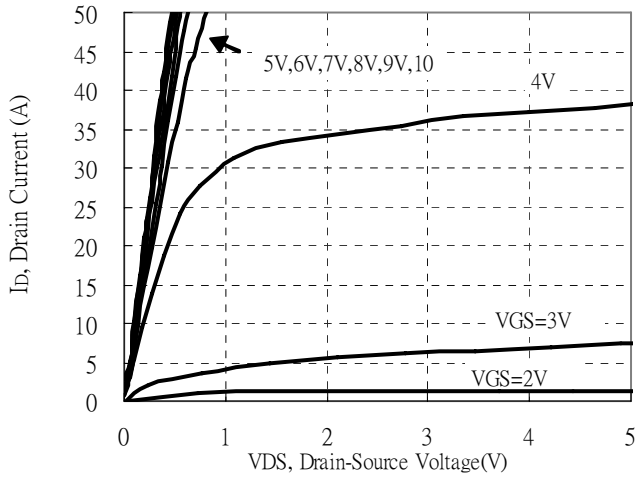
Characteristics (T_j=25°C, unless otherwise specified)

| Symbol | Min. | Typ. | Max. | Unit | Test Conditions |
|-------------------------------------|------|------|------|------|---|
| Static | | | | | |
| BV _{DSS} | 30 | - | - | V | V _{GS} =0, I _D =250μA |
| ΔBV _{DSS} /ΔT _j | - | 0.02 | - | V/°C | Reference to 25°C, I _D =1mA |
| V _{GS(th)} | 1.0 | 1.6 | 3.0 | V | V _{DS} = V _{GS} , I _D =250μA |
| G _{FS} | - | 7.6 | - | S | V _{DS} =10V, I _D =10A |
| I _{GSS} | - | - | ±100 | nA | V _{GS} =±20 |
| I _{DSS} | - | - | 1 | μA | V _{DS} =30V, V _{GS} =0 |
| I _{DSS} | - | - | 25 | μA | V _{DS} =24V, V _{GS} =0, T _j =55°C |
| *R _{DS(ON)} | - | 9 | 13.5 | mΩ | V _{GS} =10V, I _D =10A |
| *R _{DS(ON)} | - | 14 | 20 | mΩ | V _{GS} =4.5V, I _D =5A |
| Dynamic | | | | | |
| *Q _g | - | 16 | - | nC | I _D =10A, V _{DS} =15V, V _{GS} =5V |
| *Q _{gs} | - | 3.8 | - | | |
| *Q _{gd} | - | 6.2 | - | | |
| *t _{d(ON)} | - | 7.5 | - | ns | V _{DS} =25V, I _D =1A, V _{GS} =5V, R _G =3.3Ω, R _D =25Ω |
| *t _r | - | 17 | - | | |
| *t _{d(OFF)} | - | 36 | - | | |
| *t _f | - | 15 | - | | |
| C _{iss} | - | 1119 | - | pF | V _{GS} =0V, V _{DS} =15V, f=1MHz |
| C _{oss} | - | 124 | - | | |
| C _{rss} | - | 105 | - | | |
| Source-Drain Diode | | | | | |
| *V _{SD} | - | - | 1.3 | V | I _S =2.3A, V _{GS} =0V |
| *I _S | - | - | 2.3 | A | V _D =V _G =0, V _S =1.3V |
| *I _{SM} | - | - | 9.2 | A | |

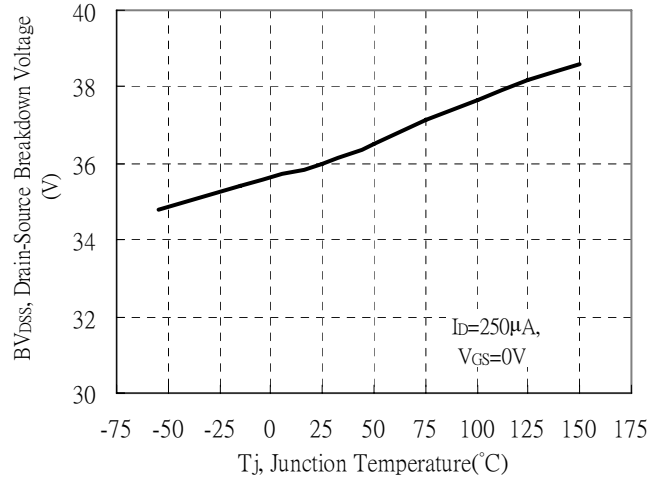
*Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤2%

Typical Characteristics

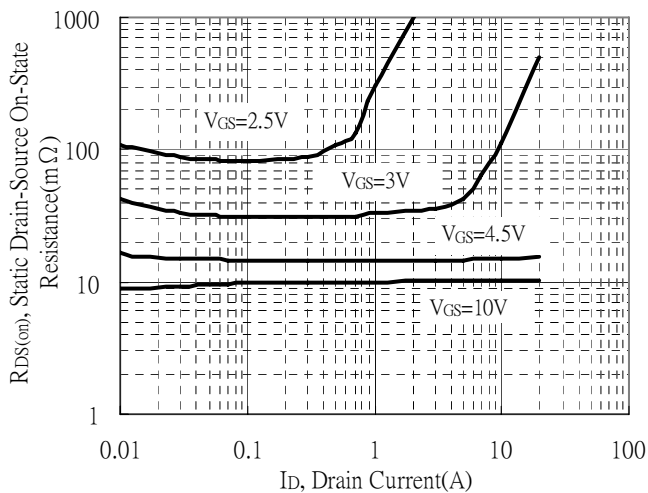
Typical Output Characteristics



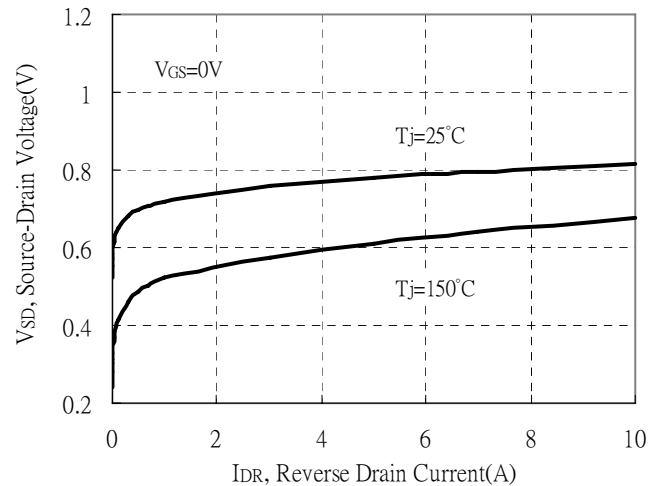
Breakdown Voltage vs Ambient Temperature



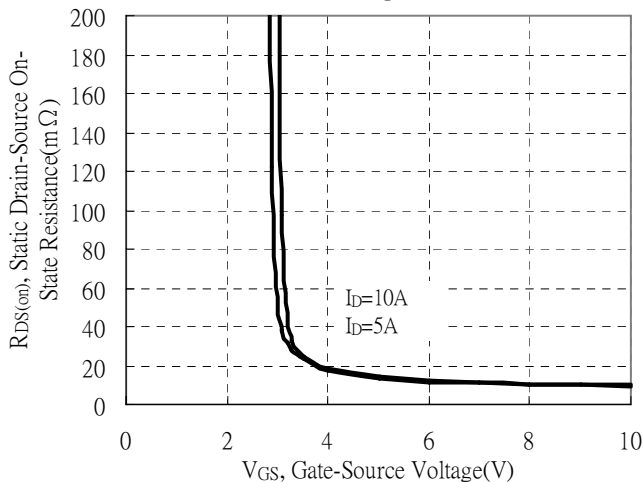
Static Drain-Source On-State resistance vs Drain Current



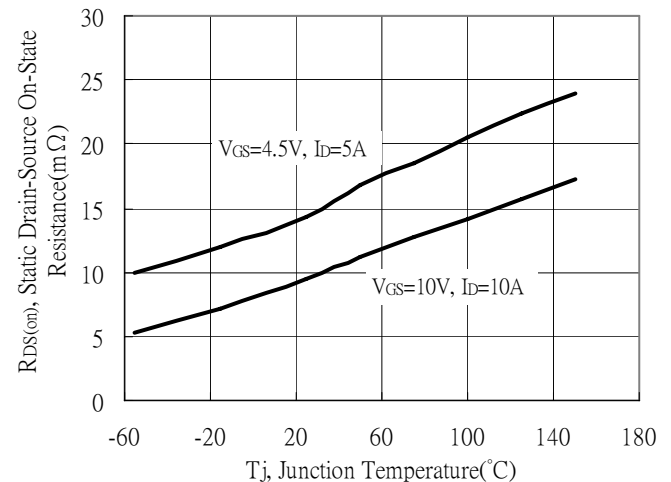
Reverse Drain Current vs Source-Drain Voltage



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



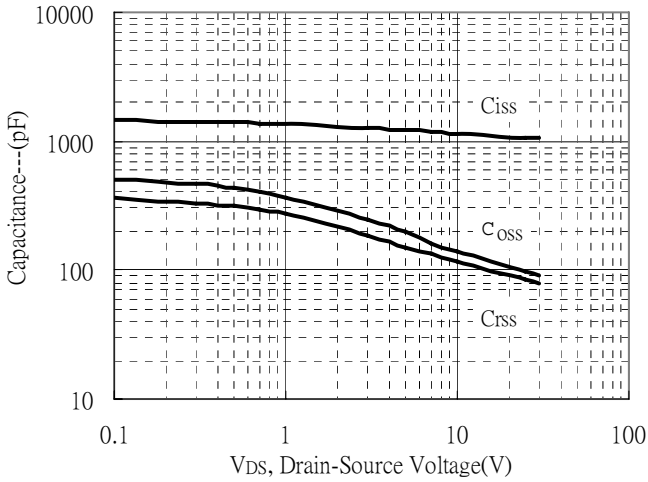
Drain-Source On-State Resistance vs Junction Temperature



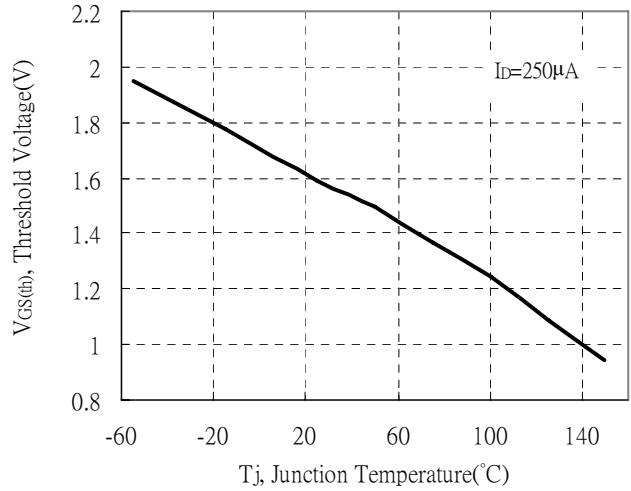


Typical Characteristics(Cont.)

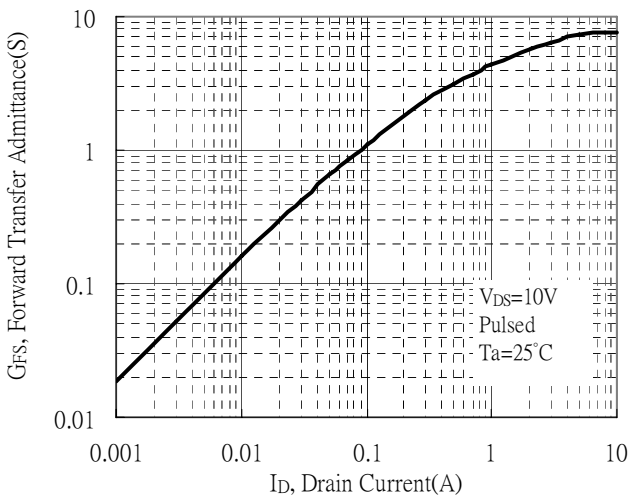
Capacitance vs Drain-to-Source Voltage



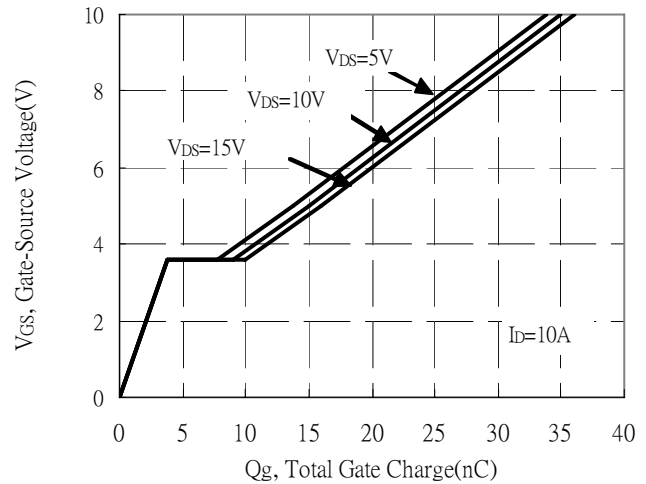
Threshold Voltage vs Junction Temperature



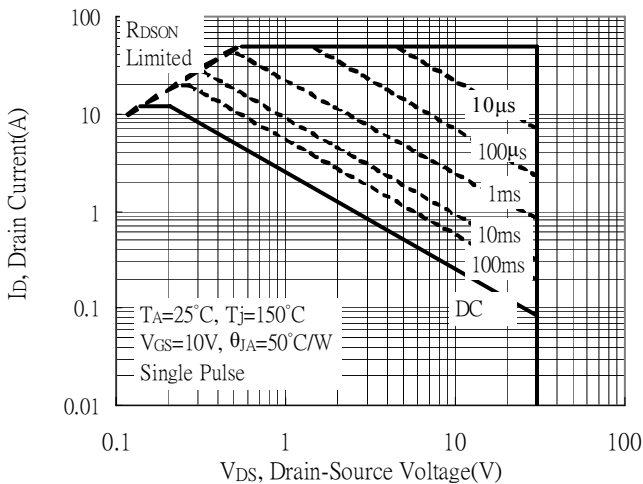
Forward Transfer Admittance vs Drain Current



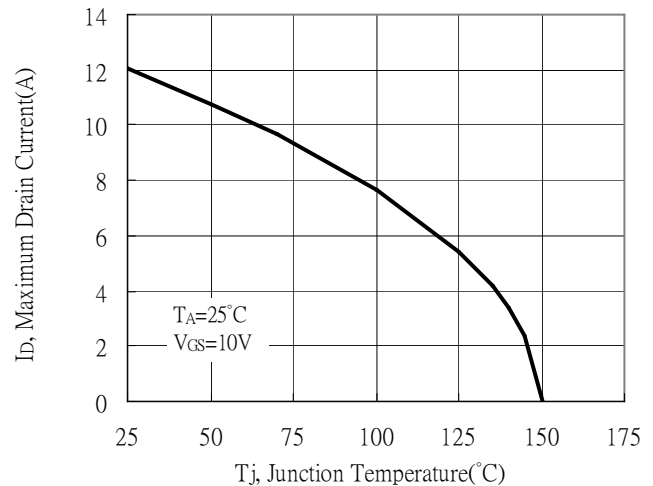
Gate Charge Characteristics



Maximum Safe Operating Area

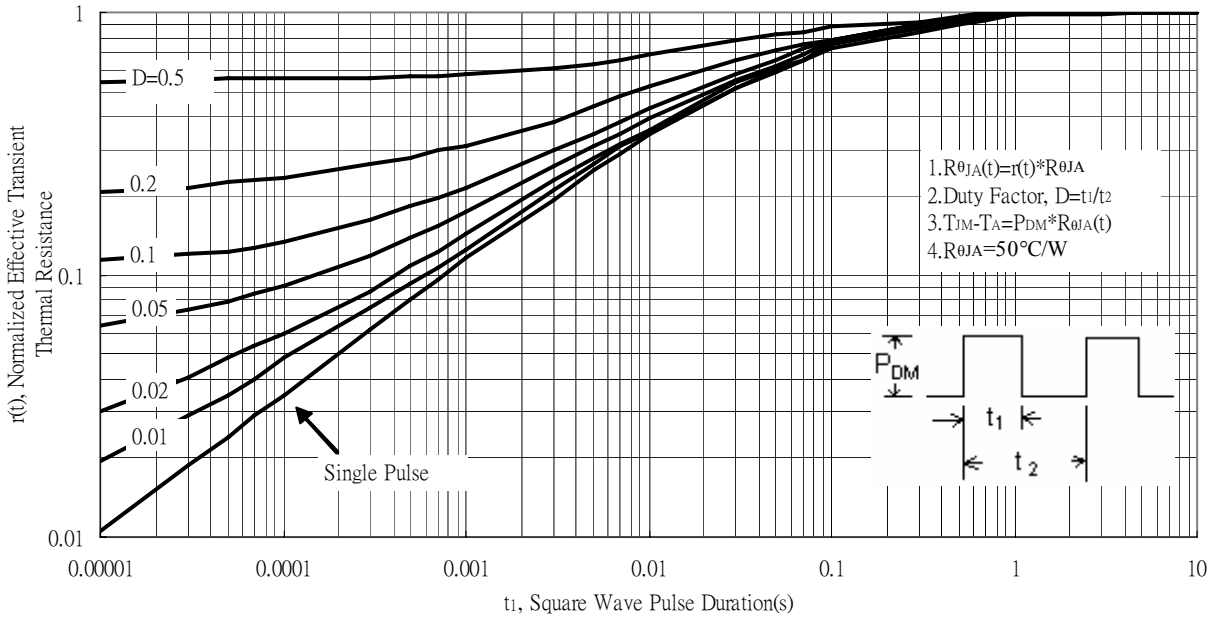


Maximum Drain Current vs Case Temperature

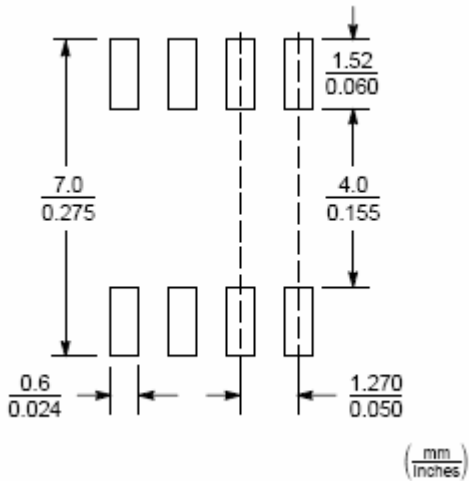


Typical Characteristics(Cont.)

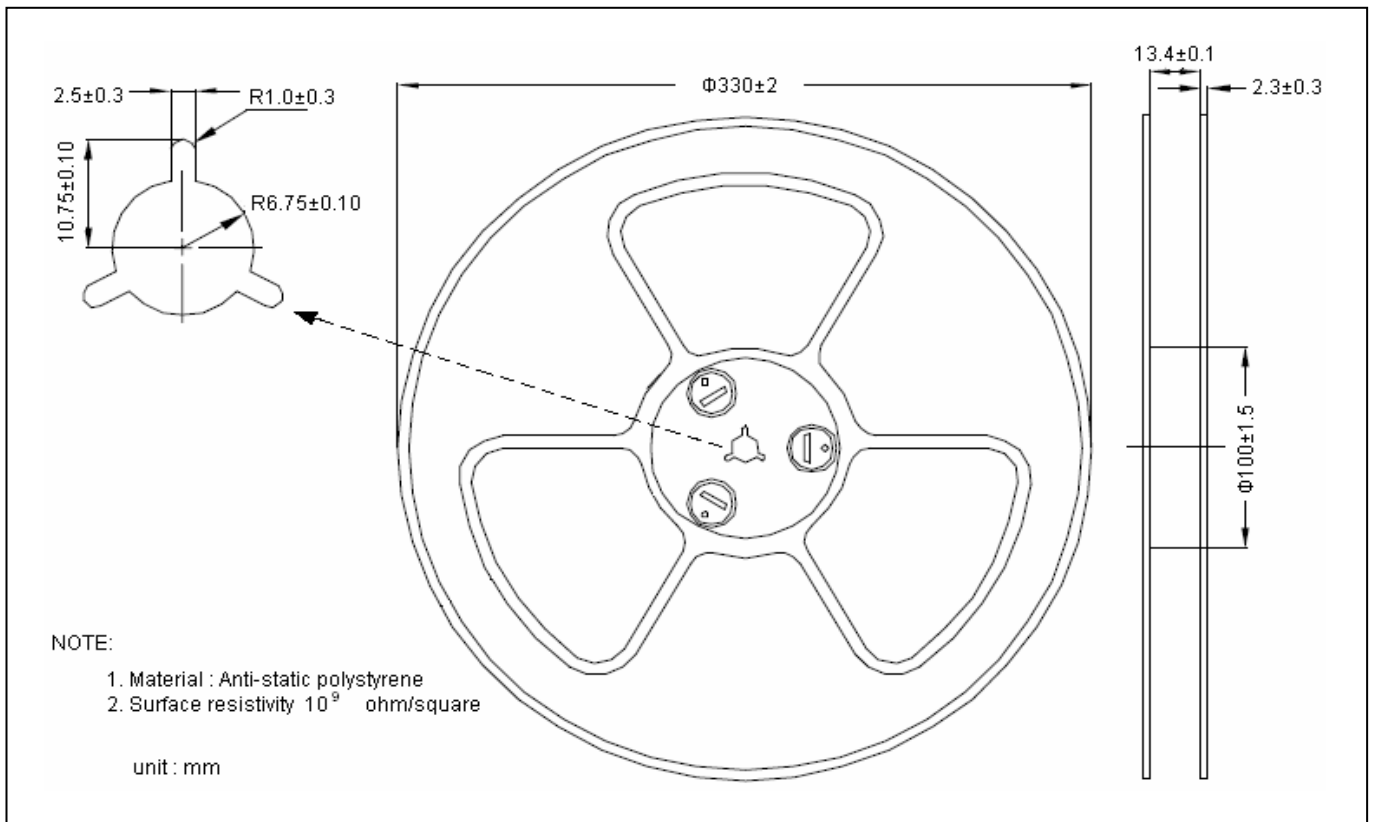
Transient Thermal Response Curves



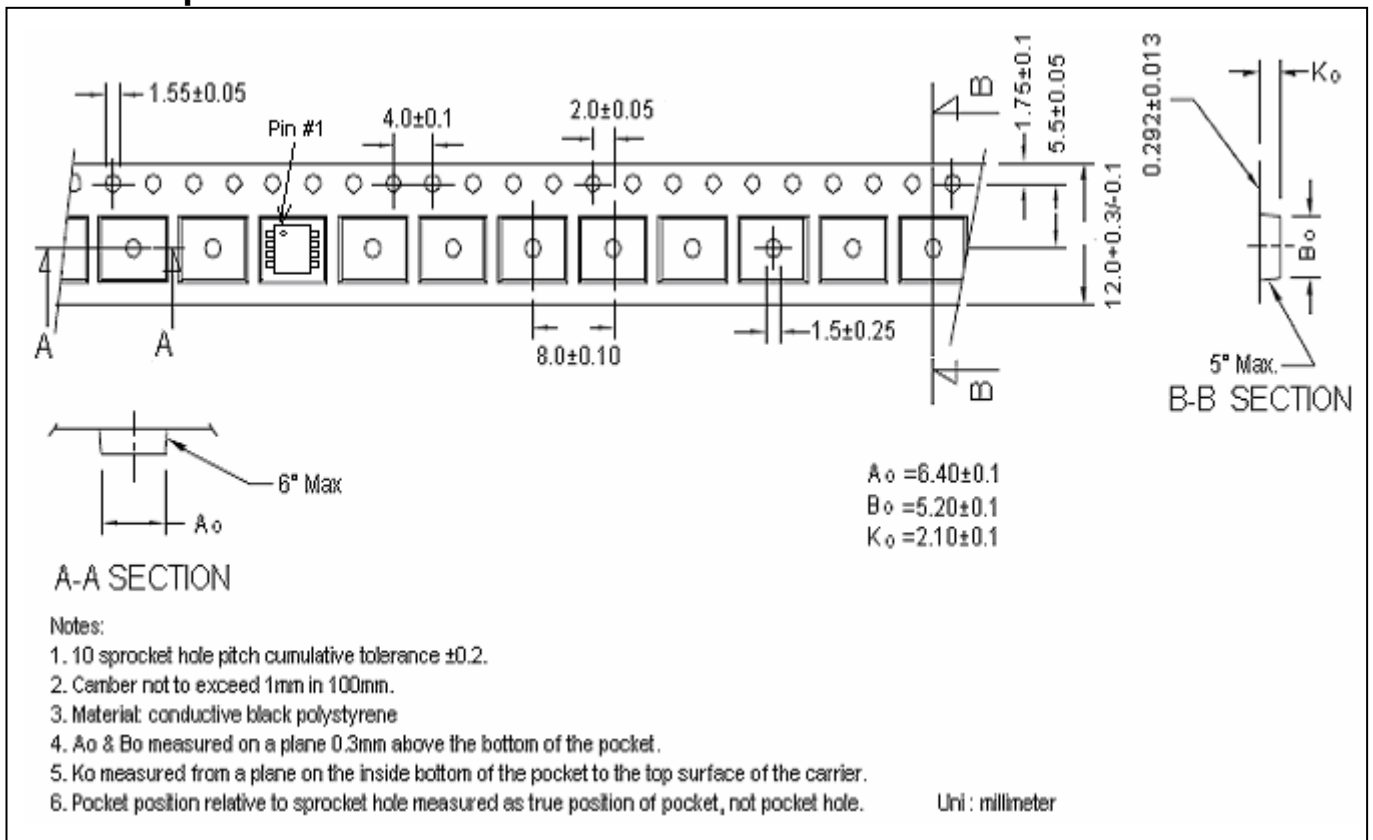
Recommended Soldering Footprint



Reel Dimension



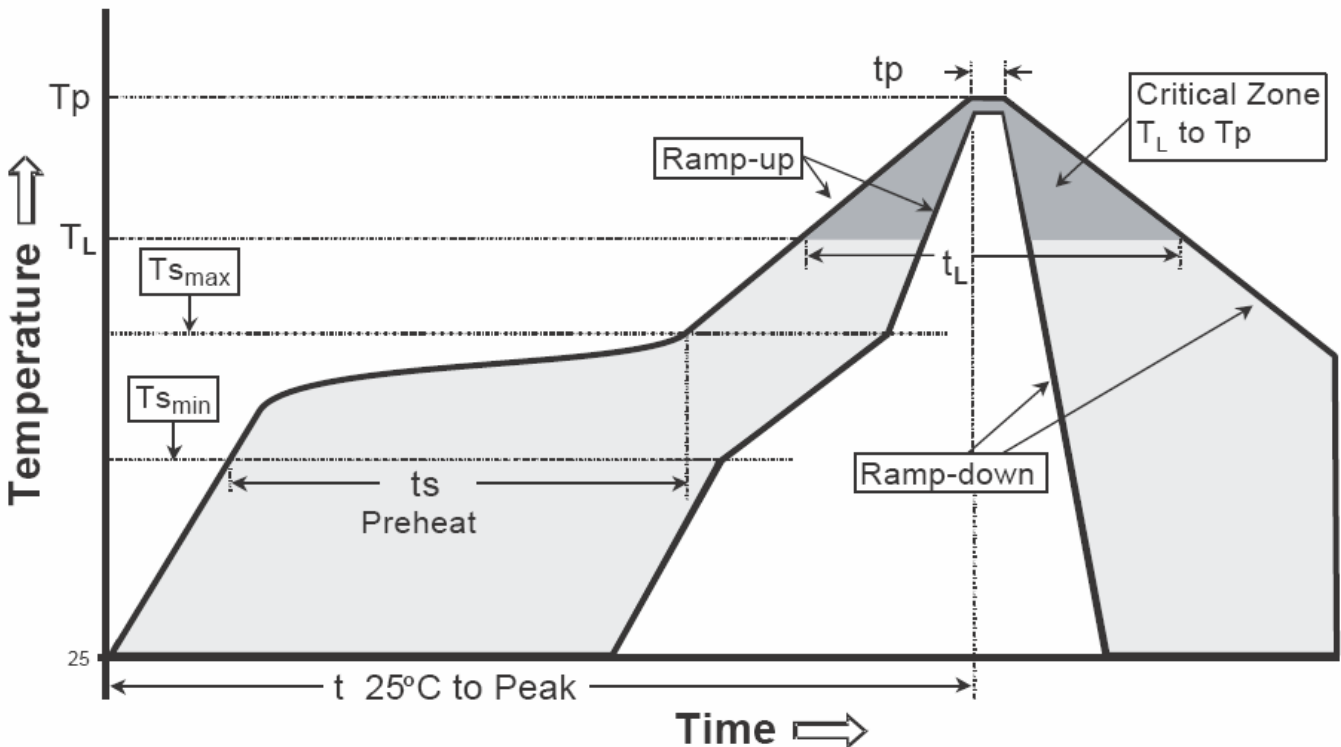
Carrier Tape Dimension



Recommended wave soldering condition

| | | |
|-----------------|------------------|-----------------|
| Product | Peak Temperature | Soldering Time |
| Pb-free devices | 260 +0/-5 °C | 5 +1/-1 seconds |

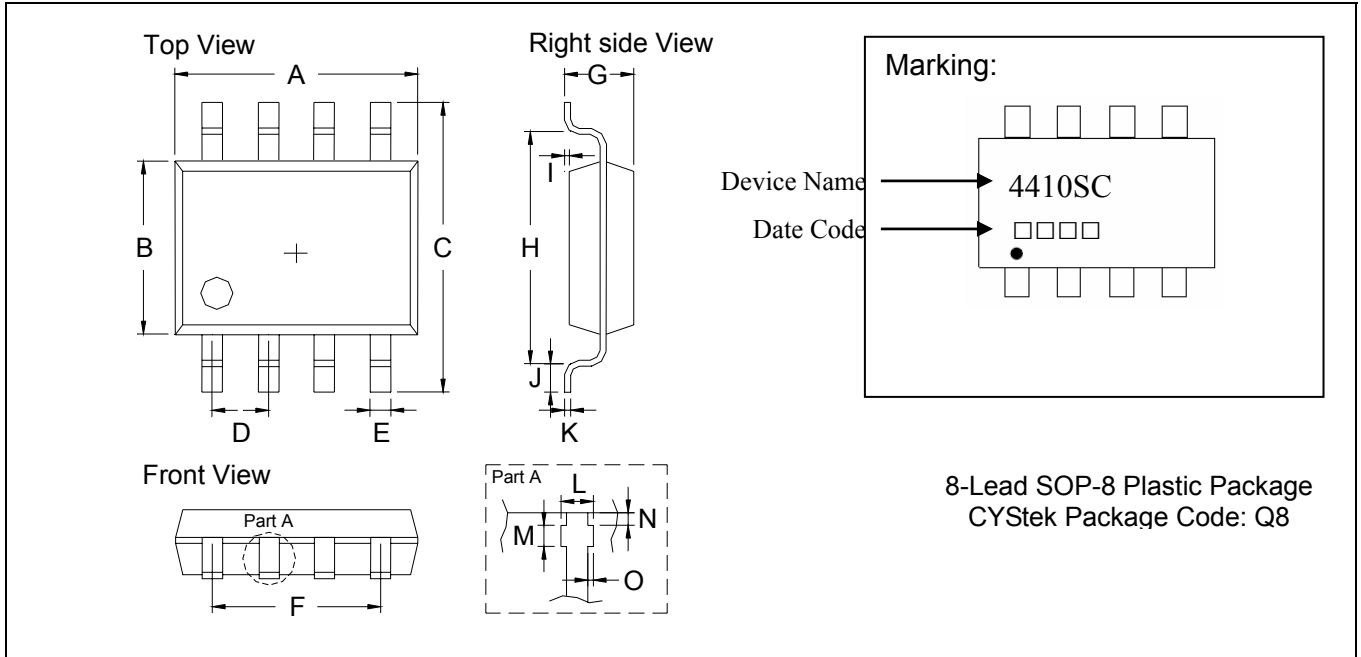
Recommended temperature profile for IR reflow



| Profile feature | Sn-Pb eutectic Assembly | Pb-free Assembly |
|---|-------------------------|------------------|
| Average ramp-up rate (T _{smax} to T _p) | 3°C/second max. | 3°C/second max. |
| Preheat | | |
| -Temperature Min(T _{s min}) | 100°C | 150°C |
| -Temperature Max(T _{s max}) | 150°C | 200°C |
| -Time(t _{s min} to t _{s max}) | 60-120 seconds | 60-180 seconds |
| Time maintained above: | | |
| -Temperature (T _L) | 183°C | 217°C |
| - Time (t _L) | 60-150 seconds | 60-150 seconds |
| Peak Temperature(T _P) | 240 +0/-5 °C | 260 +0/-5 °C |
| Time within 5°C of actual peak temperature(tp) | 10-30 seconds | 20-40 seconds |
| Ramp down rate | 6°C/second max. | 6°C/second max. |
| Time 25 °C to peak temperature | 6 minutes max. | 8 minutes max. |

Note : All temperatures refer to topside of the package, measured on the package body surface.

SOP-8 Dimension



*: Typical

| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|-----|--------|--------|-------------|------|-----|--------|--------|-------------|------|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.1890 | 0.2007 | 4.80 | 5.10 | I | 0.0098 | REF | 0.25 | REF |
| B | 0.1496 | 0.1654 | 3.80 | 4.20 | J | 0.0118 | 0.0354 | 0.30 | 0.90 |
| C | 0.2283 | 0.2441 | 5.80 | 6.20 | K | 0.0074 | 0.0098 | 0.19 | 0.25 |
| D | 0.0480 | 0.0519 | 1.22 | 1.32 | L | 0.0145 | 0.0204 | 0.37 | 0.52 |
| E | 0.0138 | 0.0193 | 0.35 | 0.49 | M | 0.0118 | 0.0197 | 0.30 | 0.50 |
| F | 0.1472 | 0.1527 | 3.74 | 3.88 | N | 0.0031 | 0.0051 | 0.08 | 0.13 |
| G | 0.0531 | 0.0689 | 1.35 | 1.75 | O | 0.0000 | 0.0059 | 0.00 | 0.15 |
| H | 0.1889 | 0.2007 | 4.80 | 5.10 | | | | | |

Notes: 1. Controlling dimension: millimeters.
 2. Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 3. If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

Important Notice:

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.
- CYStek reserves the right to make changes to its products without notice.
- CYStek **semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.