

Features

- 80V/80A,
 $R_{DS(ON)} = 8m\Omega(Typ.)@V_{GS}=10V$
- Low $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged

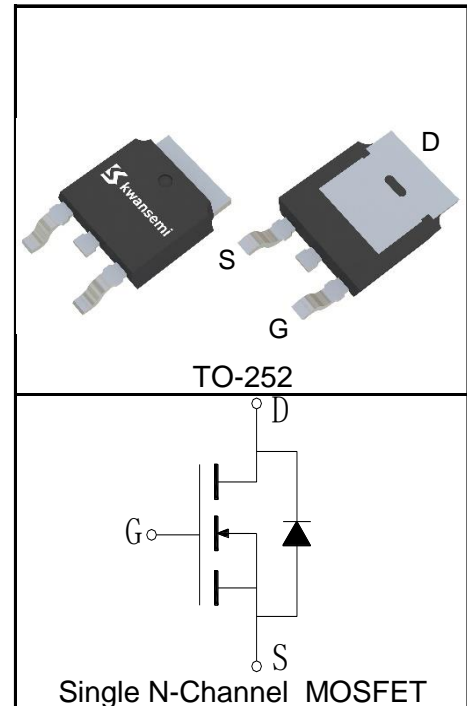
Applications

- Power Switching Application
- Load Switching



Halogen-Free

Pin Description



Absolute Maximum Ratings

| Symbol | Parameter | Rating | Unit | |
|--|--|-------------------|--------------|---|
| Common Ratings ($T_C=25^\circ C$ Unless Otherwise Noted) | | | | |
| V_{DSS} | Drain-Source Voltage | 80 | V | |
| V_{GSS} | Gate-Source Voltage | ± 25 | | |
| T_{Jmax} | Maximum Junction Temperature | 175 | $^\circ C$ | |
| T_J, T_{STG} | Operating and Storage Temperature Range | -55 to 175 | $^\circ C$ | |
| I_S | Diode Continuous Forward Current | $T_C=25^\circ C$ | 80 | A |
| Mounted on Large Heat Sink | | | | |
| $I_{DP}^{①}$ | 300 μs Pulse Drain Current Tested | $T_C=25^\circ C$ | 320 | A |
| $I_D^{②}$ | Continuous Drain Current($V_{GS}=10V$) | $T_C=25^\circ C$ | 80 | A |
| | | $T_C=100^\circ C$ | 57 | |
| P_D | Maximum Power Dissipation | $T_C=25^\circ C$ | 100 | W |
| | | $T_C=100^\circ C$ | 50 | |
| $R_{\theta JC}$ | Thermal Resistance-Junction to Case | 1.5 | $^\circ C/W$ | |
| $R_{\theta JA}^{③}$ | Thermal Resistance-Junction to Ambient | 100 | $^\circ C/W$ | |
| Drain-Source Avalanche Ratings | | | | |
| $E_{AS}^{④}$ | Avalanche Energy, Single Pulsed | 306 | mJ | |

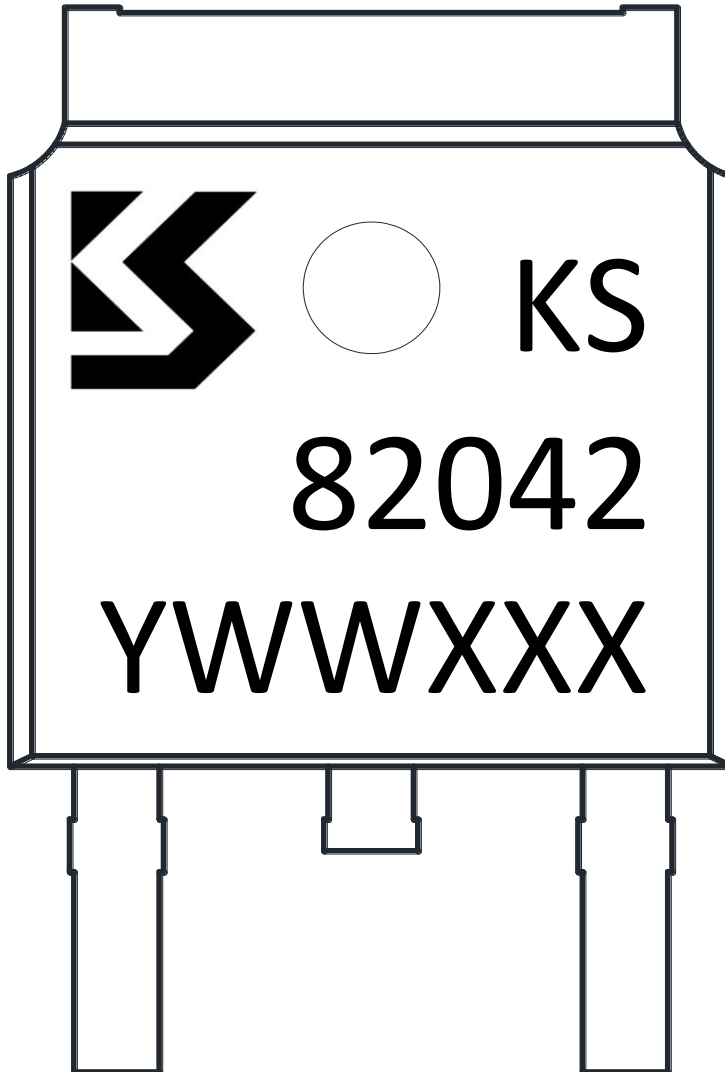
Electrical Characteristics ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)

| Symbol | Parameter | Test Condition | KS82042DA | | | Unit |
|--|----------------------------------|---|-----------|------|-----------|-----------|
| | | | Min. | Typ. | Max. | |
| Static Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_{DS}=250\mu A$ | 80 | | | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=80V, V_{GS}=0V$ | | | 1 | μA |
| | | $T_J=125^\circ\text{C}$ | | | 30 | |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_{DS}=250\mu A$ | 2 | 3 | 4 | V |
| I_{GSS} | Gate Leakage Current | $V_{GS}=\pm 25V, V_{DS}=0V$ | | | ± 100 | nA |
| $R_{DS(ON)}^{(5)}$ | Drain-Source On-state Resistance | $V_{GS}=10V, I_{DS}=40A$ | | 8 | 9.8 | $m\Omega$ |
| | | $V_{GS}=6V, I_{DS}=20A$ | | 11 | 13.5 | $m\Omega$ |
| Diode Characteristics | | | | | | |
| $V_{SD}^{(5)}$ | Diode Forward Voltage | $I_{SD}=40A, V_{GS}=0V$ | | 0.88 | 1.2 | V |
| t_{rr} | Reverse Recovery Time | $I_{SD}=40A, dI_{SD}/dt=100A/\mu s$ | | 30 | | ns |
| Q_{rr} | Reverse Recovery Charge | | | 62 | | nC |
| Dynamic Characteristics⁽⁶⁾ | | | | | | |
| R_G | Gate Resistance | $V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$ | | 1.2 | | Ω |
| C_{iss} | Input Capacitance | $V_{GS}=0V,$ $V_{DS}=40V,$ Frequency=1.0MHz | | 4440 | | pF |
| C_{oss} | Output Capacitance | | | 190 | | |
| C_{rss} | Reverse Transfer Capacitance | | | 170 | | |
| $t_{d(ON)}$ | Turn-on Delay Time | $V_{DD}=40V, I_{DS}=40A,$ $V_{GEN}=10V, R_G=3\Omega$ | | 15 | | ns |
| t_r | Turn-on Rise Time | | | 44 | | |
| $t_{d(OFF)}$ | Turn-off Delay Time | | | 65 | | |
| t_f | Turn-off Fall Time | | | 21 | | |
| Gate Charge Characteristics⁽⁶⁾ | | | | | | |
| Q_g | Total Gate Charge | $V_{DS}=40V, V_{GS}=10V,$ $I_{DS}=40A$ | | 94 | | nC |
| Q_{gs} | Gate-Source Charge | | | 22 | | |
| Q_{gd} | Gate-Drain Charge | | | 33 | | |

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 60A.
 - ③ When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.
 - ④ Limited by T_{Jmax} , Starting $T_J = 25^\circ\text{C}$, $I_{ASmax} = 35A$, $L = 0.5\text{mH}$, $V_{DD} = 48V$, $R_G = 25\Omega$, $V_{GS} = 10V$. Part not recommended for use above this value. 100% Final Test at $I_{AS} = 25A$, $L = 0.5\text{mH}$.
 - ⑤ Pulse test; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
 - ⑥ Guaranteed by design, not subject to production testing.

Ordering and Marking Information

| Device | Package | Packaging | Quantity | Reel Size | Tape width |
|-----------|---------|-----------|----------|-----------|------------|
| KS82042DA | TO-252 | Tape&Reel | 2500 | 13" | 16mm |

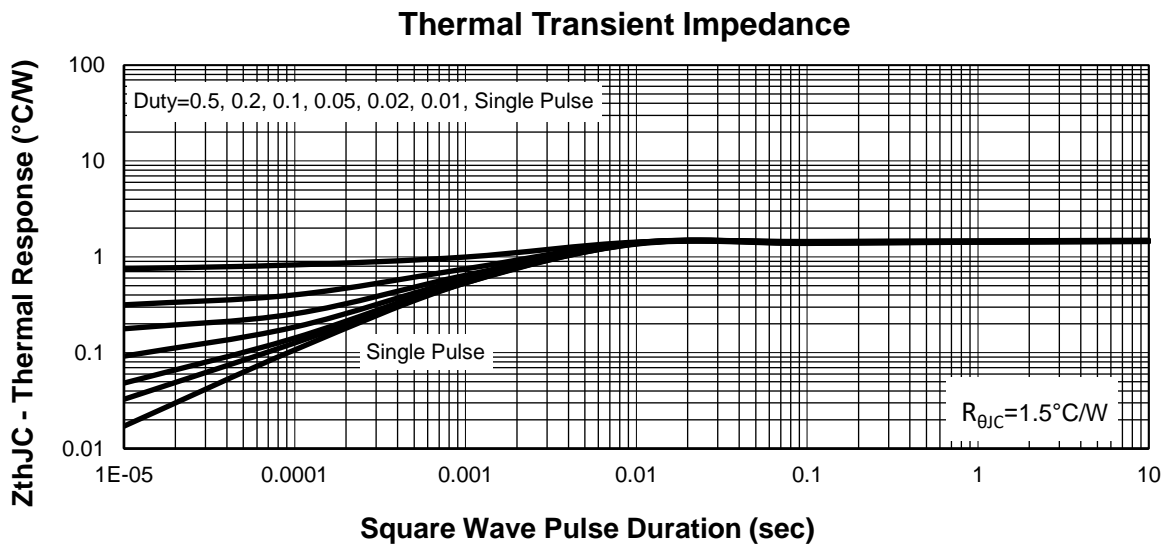
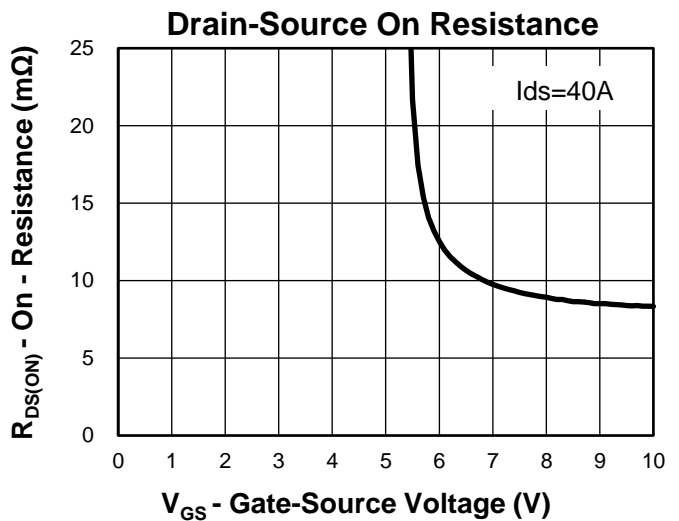
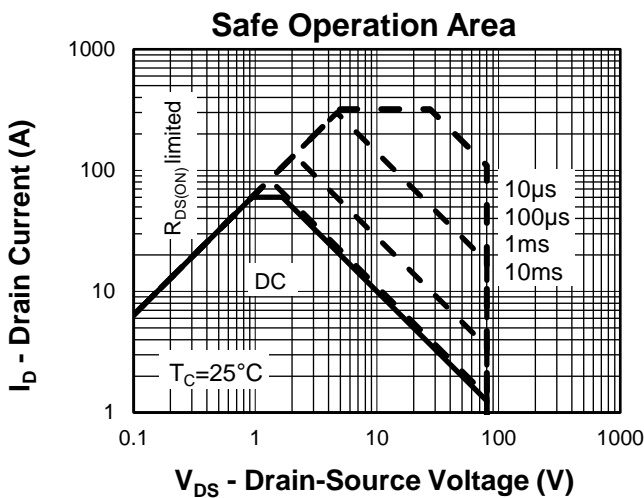
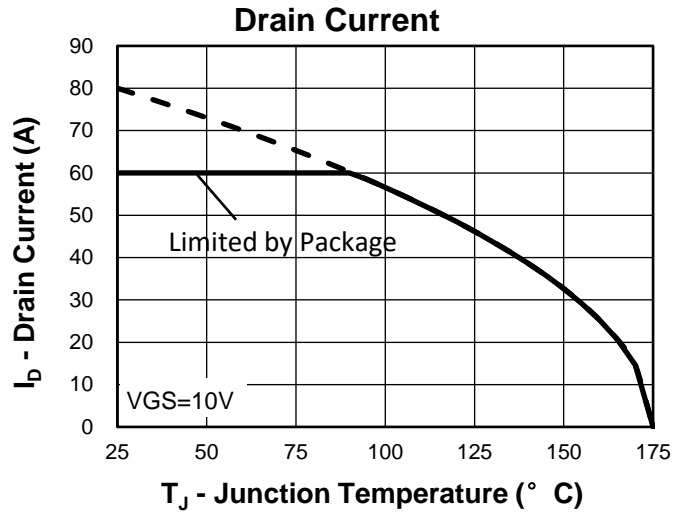
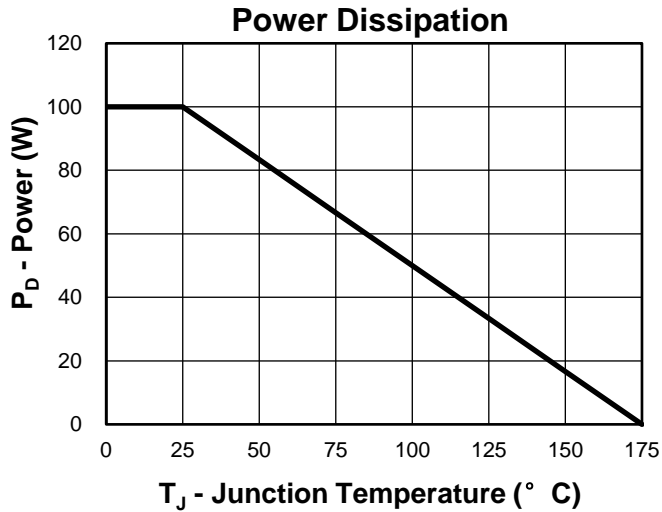


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

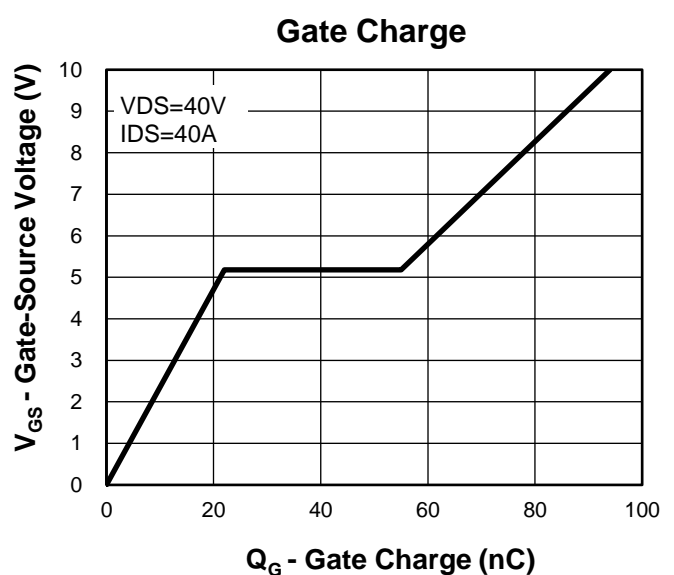
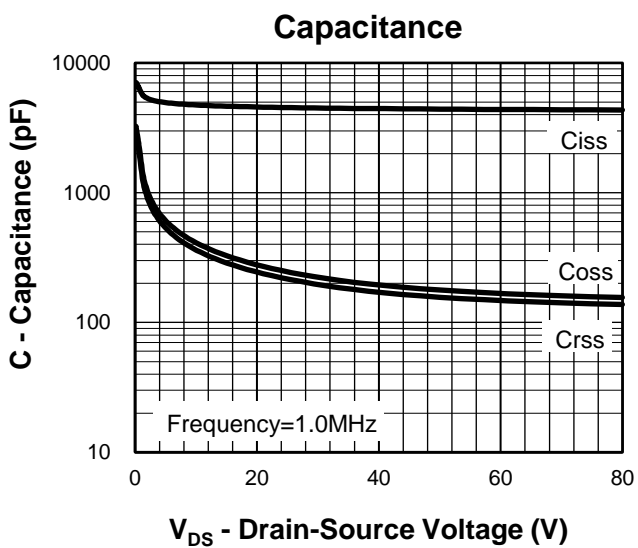
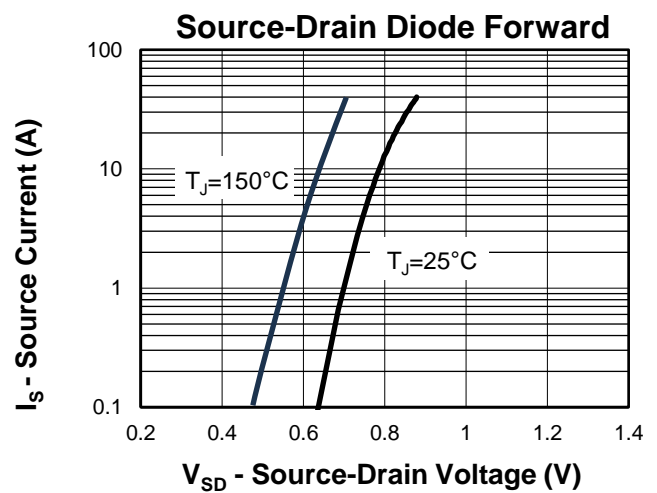
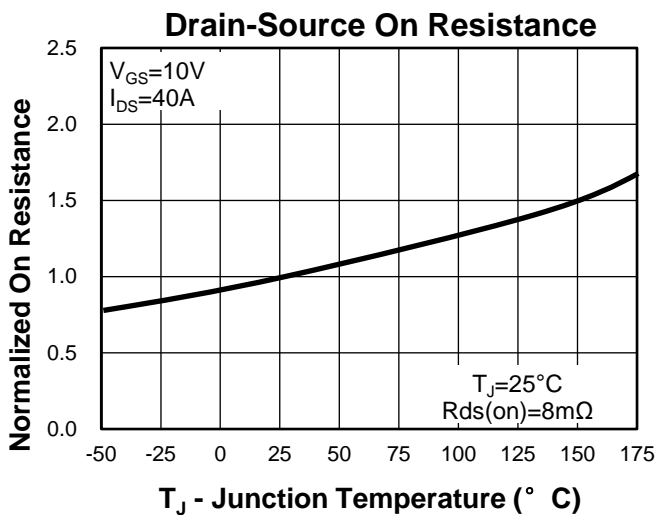
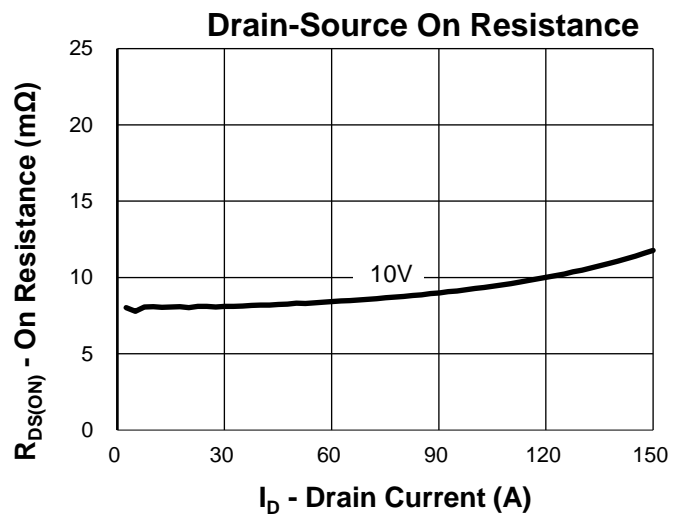
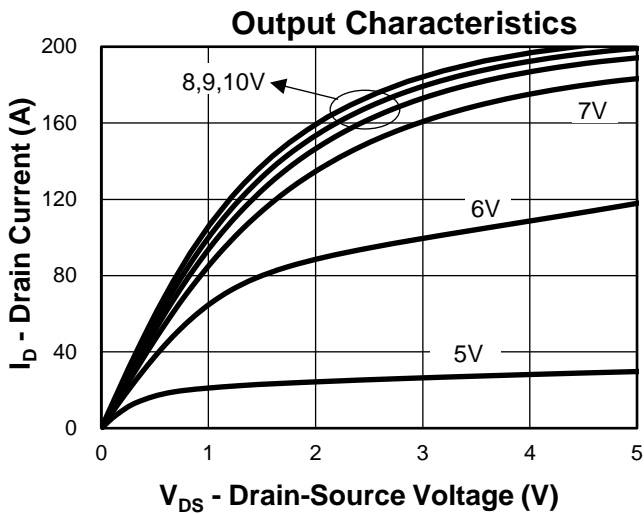
2nd Line: Part Number(82042)

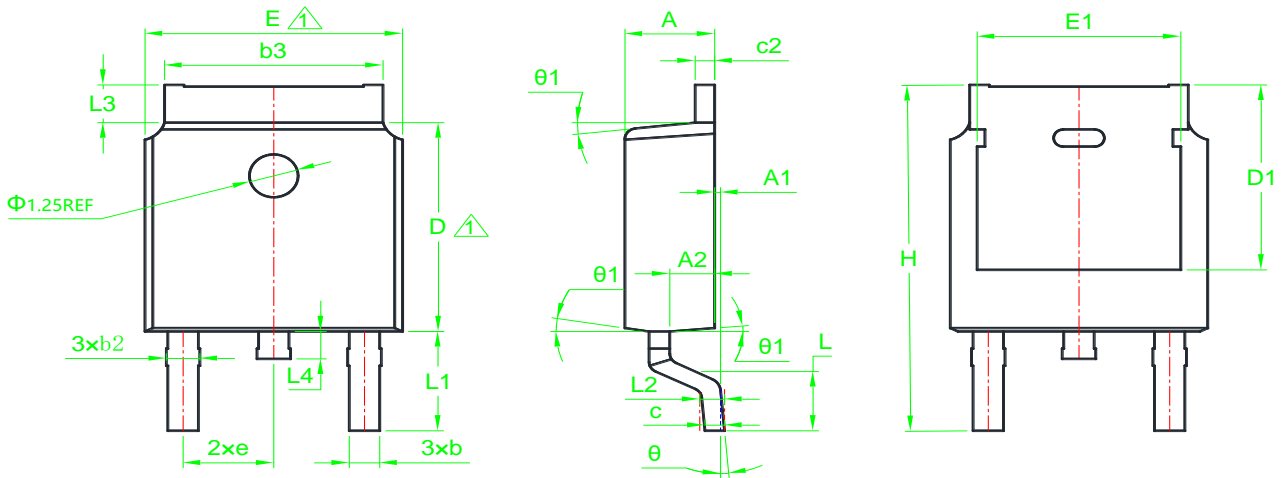
3rd Line: Lot Number(YWWXXX)

Typical Characteristics



Typical Characteristics



Package Information
TO-252


| SYMBOL | MM | | | INCH | | | SYMBOL | MM | | | INCH | | |
|--------|----------|------|------|----------|-------|-------|------------|----------|-------|-------|----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX | | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 2.20 | 2.30 | 2.38 | 0.087 | 0.091 | 0.094 | E | 6.40 | 6.60 | 6.70 | 0.252 | 0.260 | 0.264 |
| A1 | 0.00 | * | 0.15 | 0.000 | * | 0.006 | E1 | 4.55 | * | 5.15 | 0.179 | * | 0.203 |
| A2 | 0.90 | 1.00 | 1.10 | 0.035 | 0.039 | 0.043 | H | 9.60 | 10.10 | 10.40 | 0.378 | 0.398 | 0.409 |
| b | 0.65 | 0.75 | 0.85 | 0.026 | 0.030 | 0.033 | L | 1.40 | 1.50 | 1.70 | 0.055 | 0.059 | 0.067 |
| b2 | 0.72 | * | 0.90 | 0.028 | * | 0.035 | L1 | 2.90REF | | | 0.114REF | | |
| b3 | 5.13 | 5.33 | 5.46 | 0.202 | 0.210 | 0.215 | L2 | 0.508BSC | | | 0.020BSC | | |
| c | 0.47 | 0.51 | 0.54 | 0.019 | 0.020 | 0.021 | L3 | 0.90 | * | 1.25 | 0.035 | * | 0.049 |
| D | 6.00 | 6.10 | 6.20 | 0.236 | 0.240 | 0.244 | L4 | 0.60 | * | 1.00 | 0.024 | * | 0.039 |
| D1 | 5.25 | 5.35 | 5.60 | 0.207 | 0.211 | 0.220 | θ | 0° | * | 10° | 0° | * | 10° |
| e | 2.286BSC | | | 0.090BSC | | | θ_1 | 5° | * | 9° | 5° | * | 9° |

$\triangle 1$ Dimensions D and E do not include mold flash protrusions or gate burrs.

Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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