

Features

- 100V/130A,
 $R_{DS(on)} = 4.5m\Omega(Typ.)@V_{GS}=10V$
- Excellent $Q_G \times R_{DS(on)}$ product(FOM)
- SGT Technology
- Fast Switching Speed
- 100% Avalanche Tested

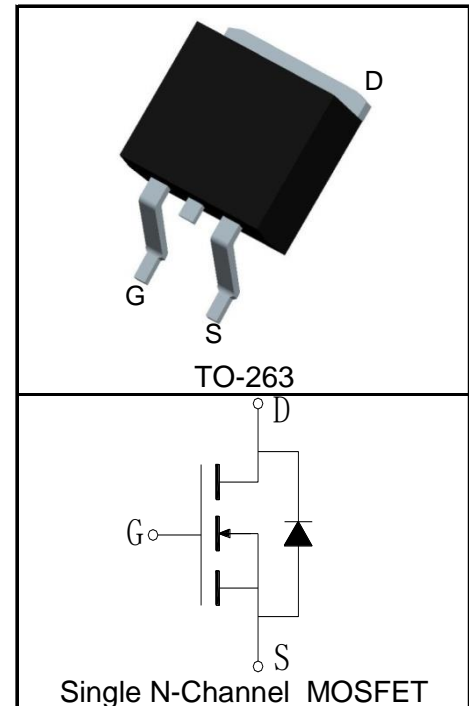
Applications

- Motor Control
- Battery Power Management



Halogen-Free

Pin Description



Absolute Maximum Ratings

| Symbol | Parameter | Rating | Unit |
|--|--|-------------------------------|---------------------------|
| Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted) | | | |
| V_{DSS} | Drain-Source Voltage | 100 | V |
| V_{GSS} | Gate-Source Voltage | ± 20 | |
| T_J | Maximum Junction Temperature | 175 | $^\circ\text{C}$ |
| T_{STG} | Storage Temperature Range | -55 to 175 | $^\circ\text{C}$ |
| I_S | Diode Continuous Forward Current | $T_C=25^\circ\text{C}$ 130 | A |
| Mounted on Large Heat Sink | | | |
| $I_{DP}^{①}$ | 300 μs Pulse Drain Current Tested | $T_C=25^\circ\text{C}$ 520 | A |
| $I_D^{②}$ | Continuous Drain Current($V_{GS}=10V$) | $T_C=25^\circ\text{C}$ 130 | A |
| | | $T_C=100^\circ\text{C}$ 92 | |
| P_D | Maximum Power Dissipation | $T_C=25^\circ\text{C}$ 150 | W |
| | | $T_C=100^\circ\text{C}$ 75 | |
| $R_{\theta JC}$ | Thermal Resistance-Junction to Case | 1 | $^\circ\text{C}/\text{W}$ |
| $R_{\theta JA}^{③}$ | Thermal Resistance-Junction to Ambient | 62.5 | $^\circ\text{C}/\text{W}$ |
| Drain-Source Avalanche Ratings | | | |
| $E_{AS}^{④}$ | Avalanche Energy, Single Pulsed | 240 | mJ |

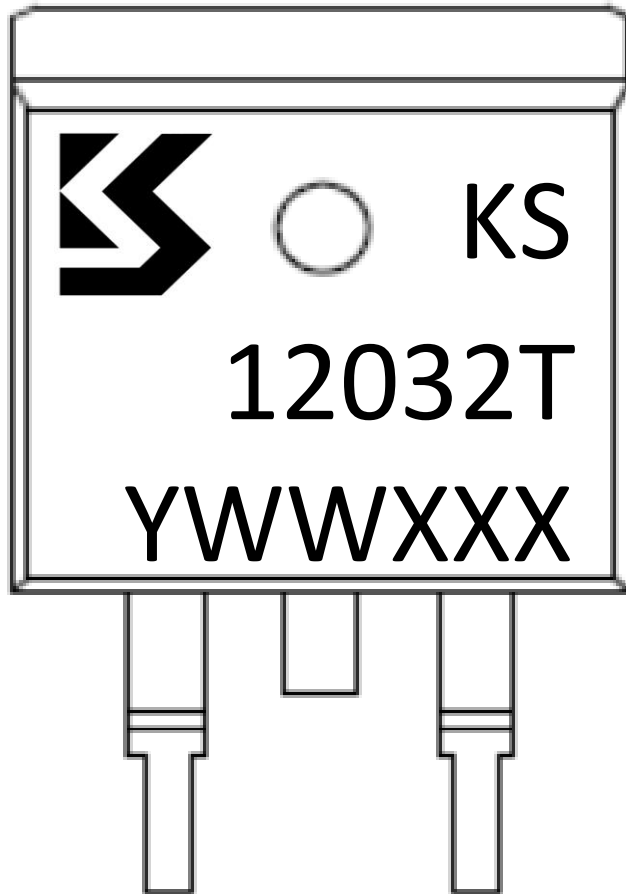
Electrical Characteristics ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)

| Symbol | Parameter | Test Condition | KS12032GAT | | | Unit |
|---|----------------------------------|---|------------|------|-----------|-----------|
| | | | Min. | Typ. | Max. | |
| Static Characteristics | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_{DS}=250\mu A$ | 100 | | | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=100V, V_{GS}=0V$ | | | 1 | μA |
| | | $T_J=125^\circ C$ | | | 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 | $V_{GS}=\pm 20V, V_{DS}=0V$ | | | ± 100 | nA |
| $R_{DS(ON)}^{⑤}$ | Drain-Source On-state Resistance | $V_{GS}=10V, I_{DS}=40A$ | | 4.5 | 5.5 | $m\Omega$ |
| | | $V_{GS}=6V, I_{DS}=20A$ | | 6 | 8 | $m\Omega$ |
| Diode Characteristics | | | | | | |
| $V_{SD}^{⑤}$ | Diode Forward Voltage | $I_{SD}=40A, V_{GS}=0V$ | | 0.89 | 1.2 | V |
| t_{rr} | Reverse Recovery Time | $I_{SD}=40A, dI_{SD}/dt=100A/\mu s$ | | 56 | | ns |
| Q_{rr} | Reverse Recovery Charge | | | 89 | | nC |
| Dynamic Characteristics ^⑥ | | | | | | |
| R_G | Gate Resistance | $V_{GS}=0V, V_{DS}=0V, F=1MHz$ | | 2.1 | | Ω |
| C_{iss} | Input Capacitance | $V_{GS}=0V,$ $V_{DS}=50V,$ Frequency=1.0MHz | | 3240 | | pF |
| C_{oss} | Output Capacitance | | | 1075 | | |
| C_{rss} | Reverse Transfer Capacitance | | | 50 | | |
| $t_{d(ON)}$ | Turn-on Delay Time | $V_{DD}=50V, I_{DS}=40A,$ $V_{GEN}=10V, R_G=3\Omega$ | | 15 | | ns |
| t_r | Turn-on Rise Time | | | 27 | | |
| $t_{d(OFF)}$ | Turn-off Delay Time | | | 48 | | |
| t_f | Turn-off Fall Time | | | 31 | | |
| Gate Charge Characteristics ^⑥ | | | | | | |
| Q_g | Total Gate Charge | $V_{DS}=50V, V_{GS}=10V,$ $I_{DS}=40A$ | | 37 | | nC |
| Q_{gs} | Gate-Source Charge | | | 8 | | |
| Q_{gd} | Gate-Drain Charge | | | 9 | | |

- Notes:
- ① Pulse width limited by safe operating area.
 - ② Calculated continuous current based on maximum allowable junction temperature. The package limitation current is 75A.
 - 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} , $I_{AS} = 31A$, $L = 0.5mH$, $V_{DD} = 48V$, $R_G = 25\Omega$, Starting $T_J = 25^\circ C$, 100% tested and guaranteed.
 - 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 |
|------------|---------|-----------|----------|-----------|------------|
| KS12032GAT | TO-263 | Tape&Reel | 800 | 13" | 24mm |

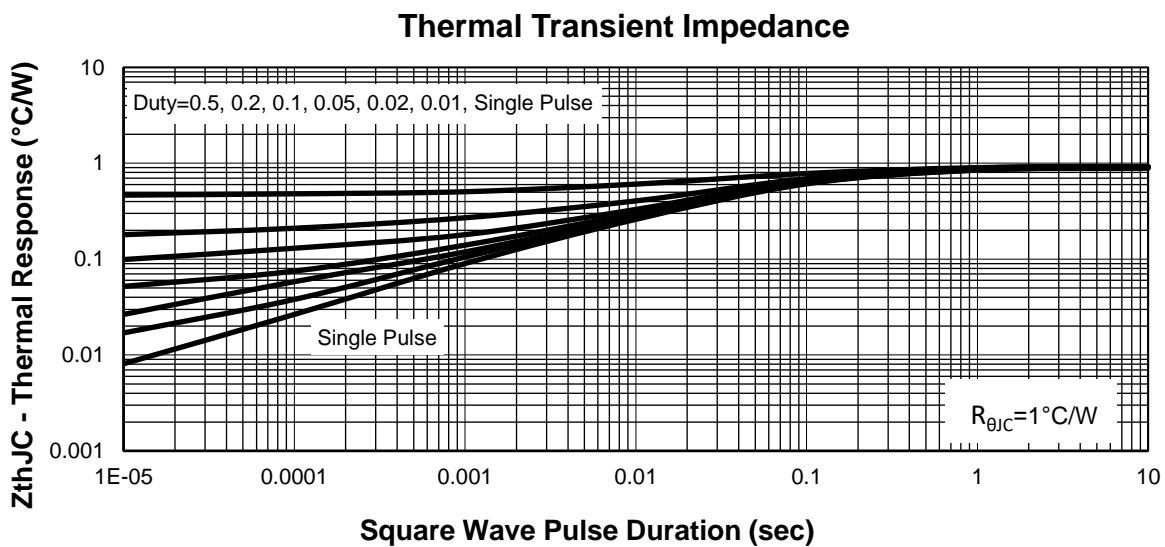
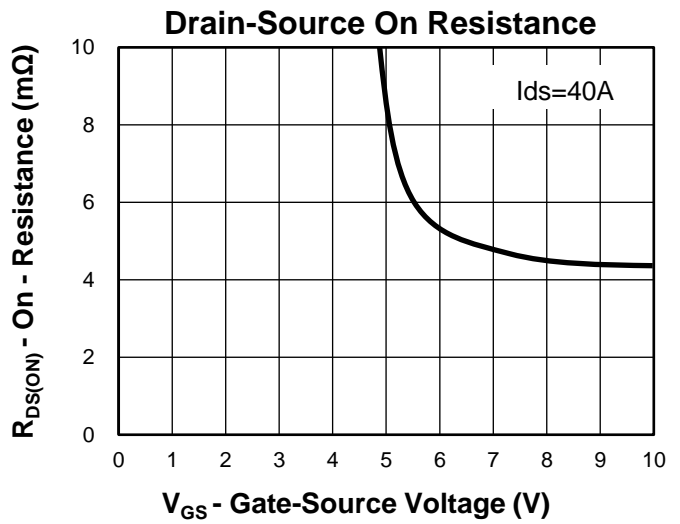
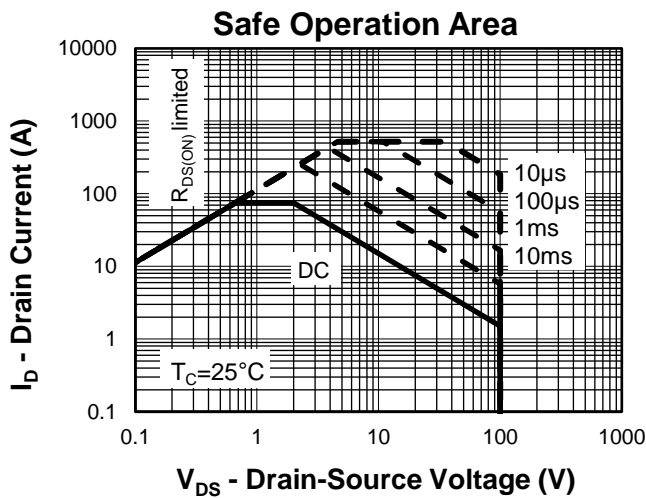
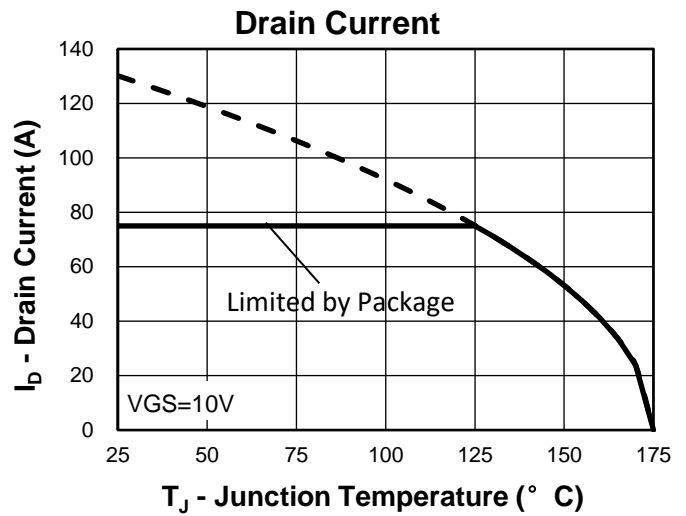
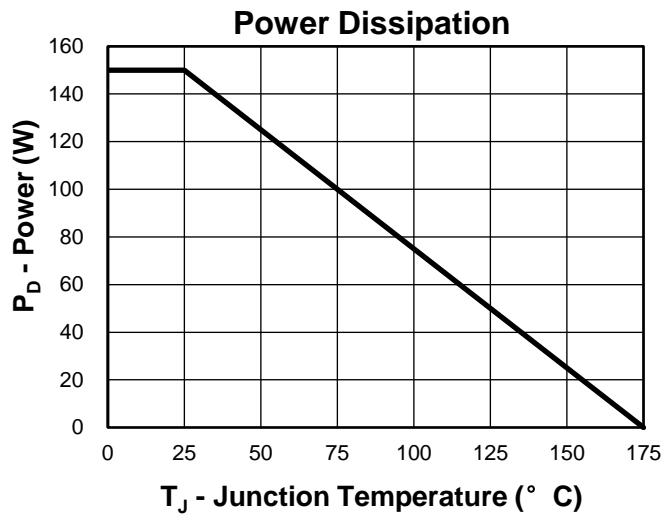


1st Line: Kwansemi LOGO, Kwansemi Code(KS)

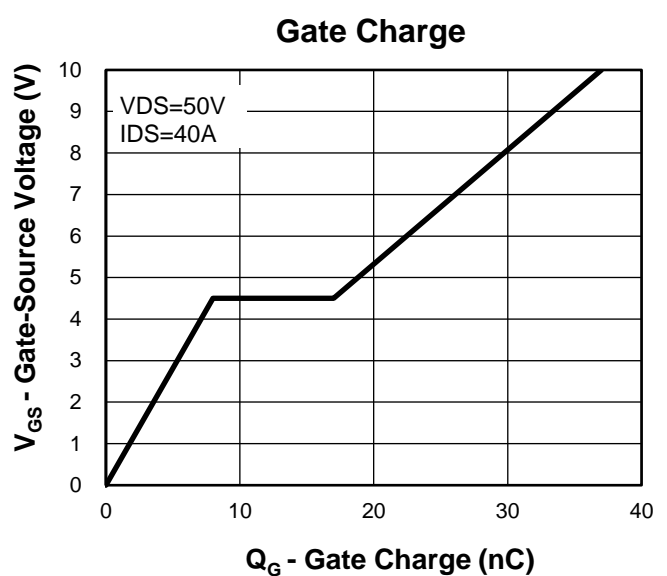
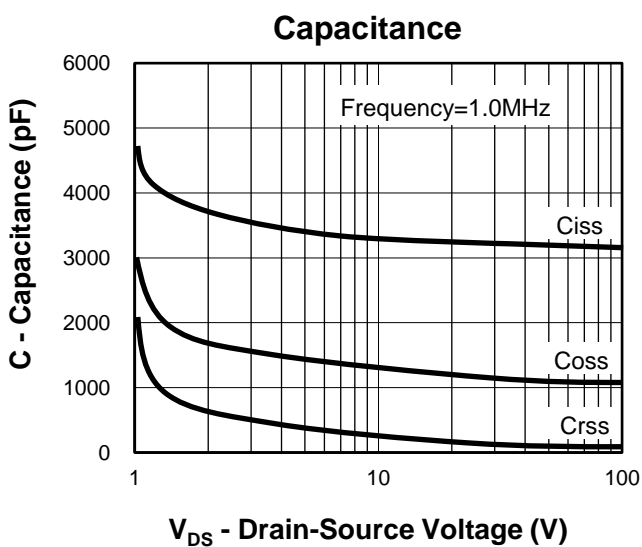
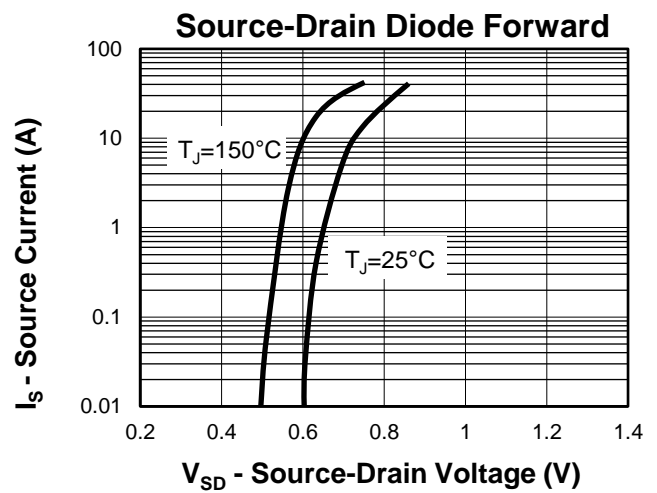
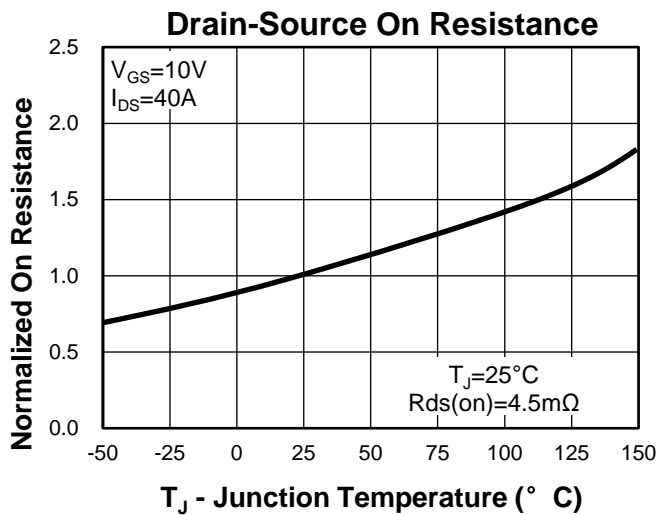
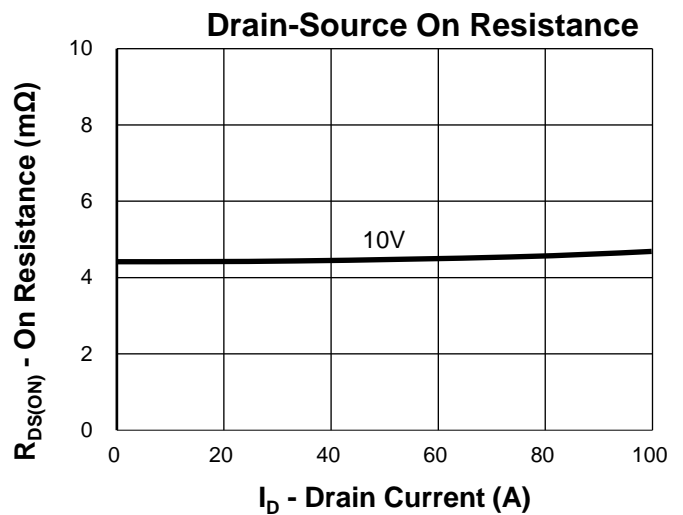
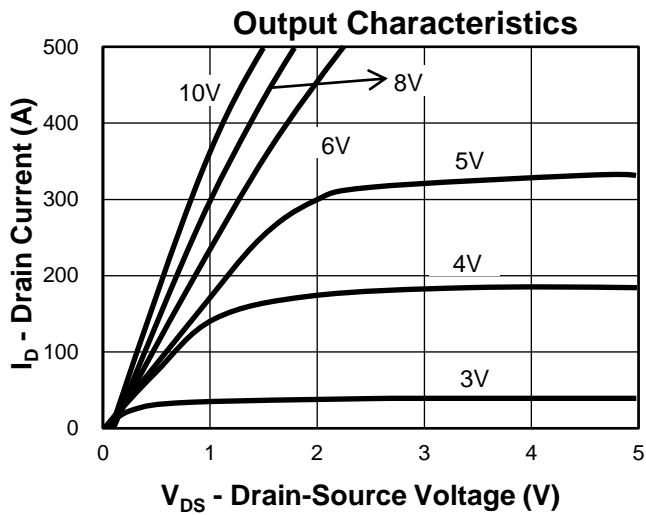
2nd Line: Part Number(12032T)

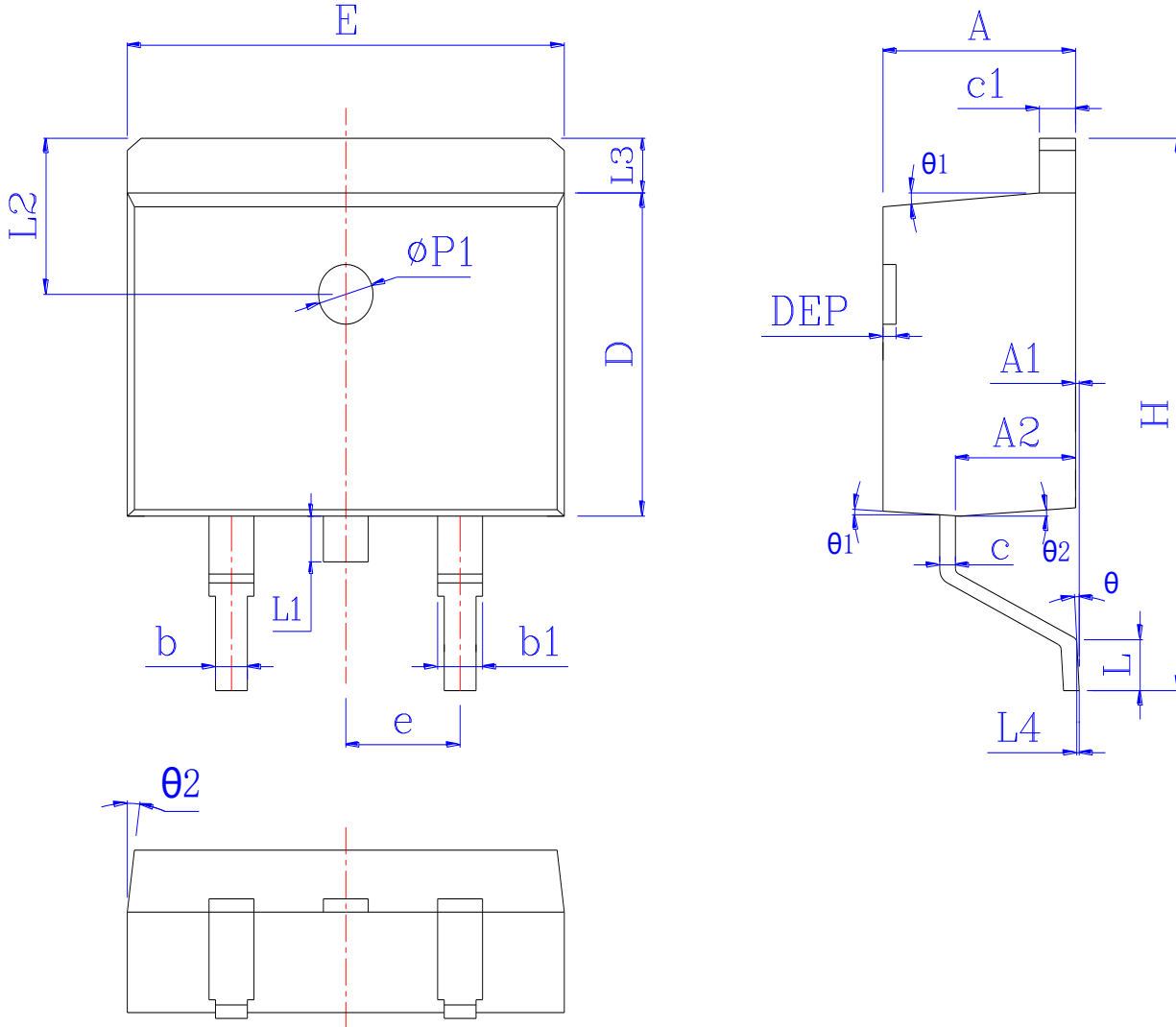
3rd Line: Lot Number(YWWXXX)

Typical Characteristics



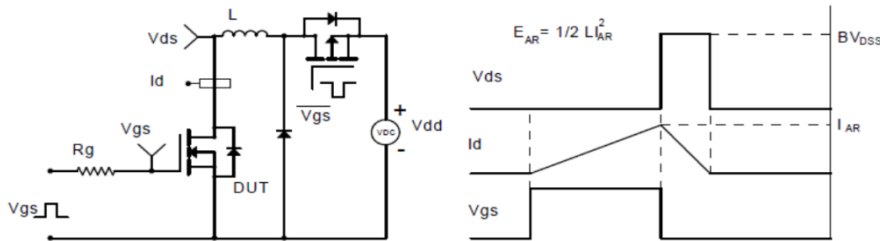
Typical Characteristics



Package Information
TO-263


| SYMBOL | MM | | | INCH | | | SYMBOL | MM | | | INCH | | |
|--------|---------|-------|-------|----------|-------|-------|-----------|----------|------|------|-----------|-------|-------|
| | MIN | NOM | MAX | MIN | NOM | MAX | | MIN | NOM | MAX | MIN | NOM | MAX |
| A | 4.40 | 4.55 | 4.72 | 0.173 | 0.179 | 0.186 | L | 1.94 | 2.30 | 2.60 | 0.076 | 0.091 | 0.102 |
| A1 | 0.00 | 0.10 | 0.25 | 0.000 | 0.005 | 0.010 | L3 | 1.17 | 1.29 | 1.40 | 0.046 | 0.051 | 0.055 |
| A2 | 2.59 | 2.69 | 2.79 | 0.102 | 0.106 | 0.110 | L1 | * | * | 1.70 | * | * | 0.067 |
| b | 0.76 | * | 0.90 | 0.030 | * | 0.035 | L4 | 0.25 BSC | | | 0.01 BSC | | |
| b1 | 1.22 | * | 1.36 | 0.048 | * | 0.054 | L2 | 2.50 REF | | | 0.098 REF | | |
| c | 0.33 | * | 0.47 | 0.013 | * | 0.019 | θ | 0° | * | 8° | 0° | * | 8° |
| c1 | 1.22 | * | 1.32 | 0.048 | * | 0.052 | $\theta1$ | 5° | 7° | 9° | 5° | 7° | 9° |
| D | 8.60 | * | 9.29 | 0.339 | * | 0.366 | $\theta2$ | 1° | 3° | 5° | 1° | 3° | 5° |
| E | 9.95 | * | 10.26 | 0.392 | * | 0.404 | DEP | 0.05 | 0.10 | 0.20 | 0.002 | 0.004 | 0.008 |
| e | 2.54BSC | | | 0.100BSC | | | $\Phi P1$ | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| H | 14.70 | 15.10 | 15.79 | 0.579 | 0.594 | 0.622 | | | | | | | |

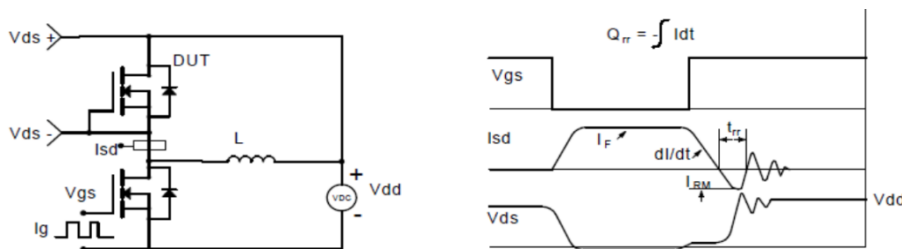
Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Diode Recovery Test Circuit and Waveforms



Gate Charge Test Circuit and Waveform



Customer Service

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