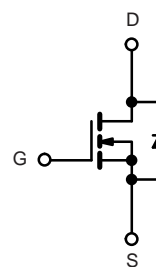


General Description

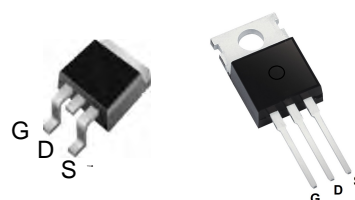
The IRFZ44NS/IRFZ44N uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.



N-Channel MOSFET

Product Summary

| | |
|----------------------------------|----------------|
| V_{DS} | 60V |
| I_D (at $V_{GS}=-10V$) | 50A |
| $R_{DS(ON)}$ (at $V_{GS}=10V$) | < 12m Ω |
| $R_{DS(ON)}$ (at $V_{GS}=4.5V$) | < 16m Ω |



Absolute Maximum Ratings(TA=25°C unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|-----------|-------------|------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Drain Current-Continuous ^{Note3} | I_D | TC=25°C | 50 |
| | | TC=100°C | 33 |
| Drain Current-Pulsed ^{Note1} | I_{DM} | 200 | A |
| Avalanche Energy ^{Note4} | E_{AS} | 64 | mJ |
| Maximum Power Dissipation | P_D | 105 | W |
| Storage Temperature Range | T_{STG} | -55 to +150 | °C |
| Operating Junction Temperature Range | T_J | -55 to +150 | °C |

Thermal Resistance

| Parameter | Symbol | Min. | Typ. | Max | Unit |
|--------------------------------------|-----------------|------|------|-----|------|
| Thermal Resistance, Junction-to-Case | $R_{\theta JC}$ | - | - | 1.4 | °C/W |

Electrical Characteristics(T_J=25°C unless otherwise noted)

| OFF CHARACTERISTICS | | | | | | |
|---------------------------------|-------------------|---|------|------|------|------|
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} =0V, I _{DS} =250uA | 60 | - | - | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =60V, V _{GS} =0V | - | - | 1.0 | uA |
| Gate-Body Leakage | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | - | - | ±100 | nA |

| ON CHARACTERISTICS | | | | | | |
|----------------------------------|---------------------|---|------|------|------|------|
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
| Gate Threshold Voltage | V _{GS(TH)} | V _{DS} =V _{GS} , I _{DS} =250uA | 1.0 | 1.6 | 2.5 | V |
| Drain-Source On-State Resistance | R _{DS(ON)} | V _{GS} =10V, I _{DS} =30A | - | 12 | 17 | mΩ |
| | | V _{GS} =4.5V, I _{DS} =20A | - | 16 | 21 | mΩ |

| DYNAMIC CHARACTERISTICS | | | | | | |
|------------------------------|------------------|---|------|------|------|------|
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
| Input Capacitance | C _{ISS} | V _{DS} =25V, V _{GS} = 0V, f=1MHz | - | 2928 | - | pF |
| Output Capacitance | C _{OSS} | | - | 141 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 120 | - | |

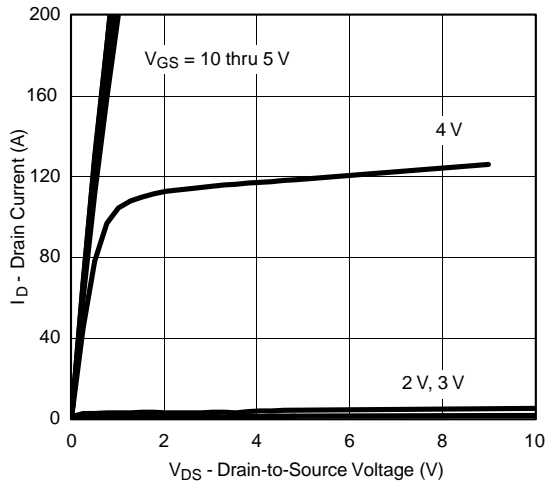
| SWITCHING CHARACTERISTICS | | | | | | |
|-------------------------------|---------------------|--|------|------|------|------|
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
| Turn-On Delay Time | T _{d(on)} | V _{GS} =10V, V _{DS} =30V, R _{GEN} =1.8Ω I _D =25A | - | 7.5 | - | ns |
| Rise Time | t _r | | - | 6.0 | - | |
| Turn-Off Delay Time | T _{d(off)} | | - | 28.4 | - | |
| Fall Time | t _f | | - | 5.5 | - | |
| Total Gate Charge at 10V | Q _g | V _{DS} =30V, I _{DS} =25A, V _{GS} =10V | - | 50 | - | nC |
| Gate to Source Gate Charge | Q _{gs} | | - | 6 | - | |
| Gate to Drain "Miller" Charge | Q _{gd} | | - | 15 | - | |

| DRAIN-SOURCE DIODE CHARACTERISTICS AND MAXIMUM RATINGS | | | | | | |
|--|-----------------|---|---------------|------|------|------|
| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
| Drain-Source Diode Forward Voltage | V _{SD} | V _{GS} =0V, I _{DS} =30A | - | - | 1.2 | V |
| Reverse Recovery Time | t _{rr} | T _J =25°C, I _F =25A | - | 29 | - | nS |
| Reverse Recovery Charge | Q _{rr} | | di/dt=100A/us | - | 42 | - |

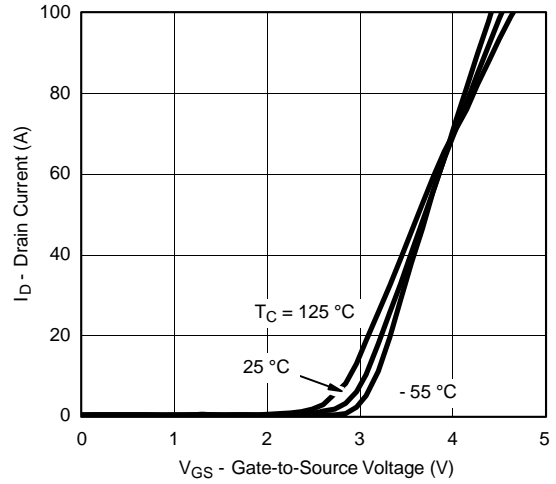
Notes:

- 1: Repetitive rating, pulse width limited by maximum junction temperature.
- 2: Surface mounted on FR4 Board, t_s≤10sec.
- 3: Pulse width ≤ 300μs, duty cycle ≤ 2%.
- 4: EAS condition: L=0.5mH, V_{DD}=10V, V_G=10V, V_{GATE}=20V, Start T_J=25°C.

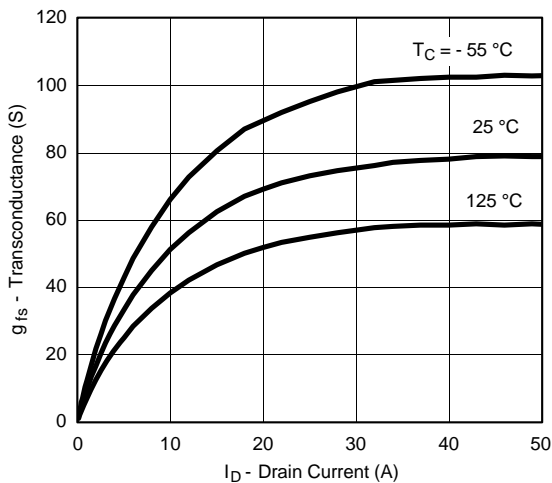
TYPICAL CHARACTERISTICS (25 °C unless noted)



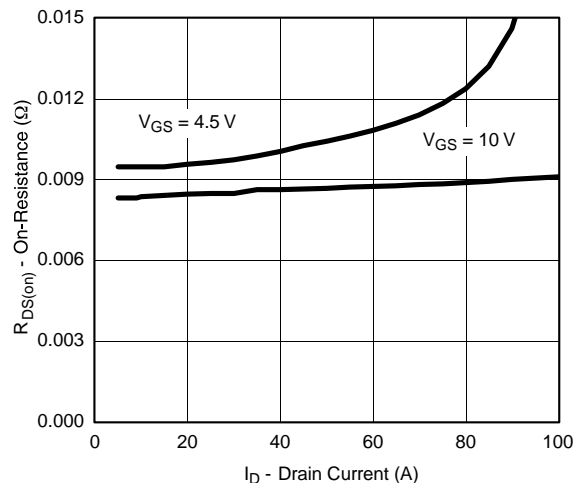
Output Characteristics



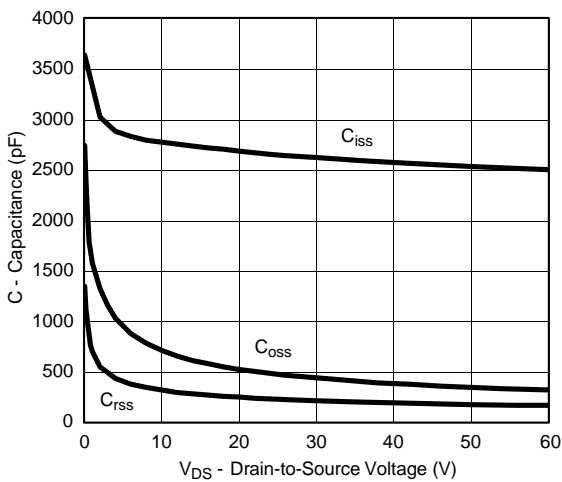
Transfer Characteristics



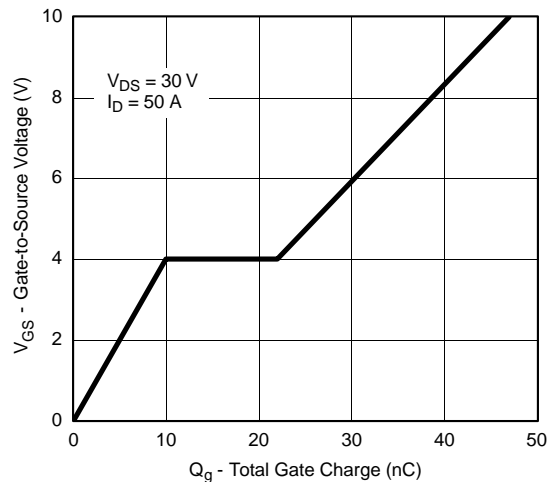
Transconductance



On-Resistance vs. Drain Current

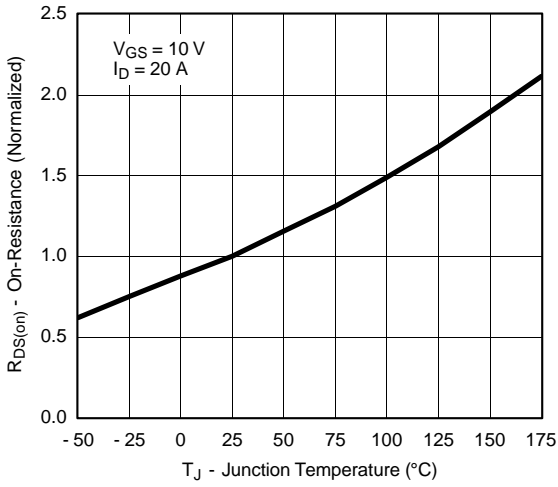


Capacitance

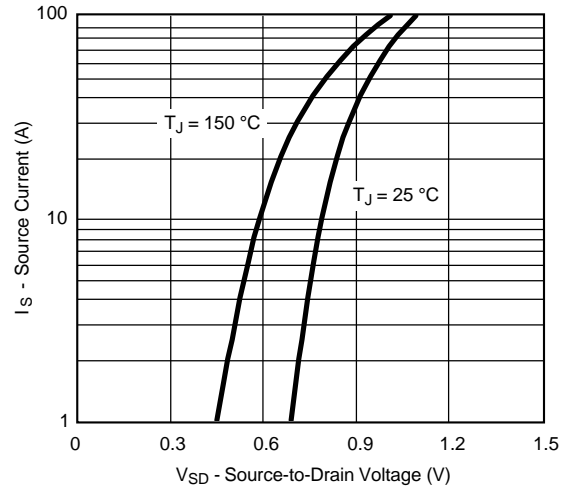


Gate Charge

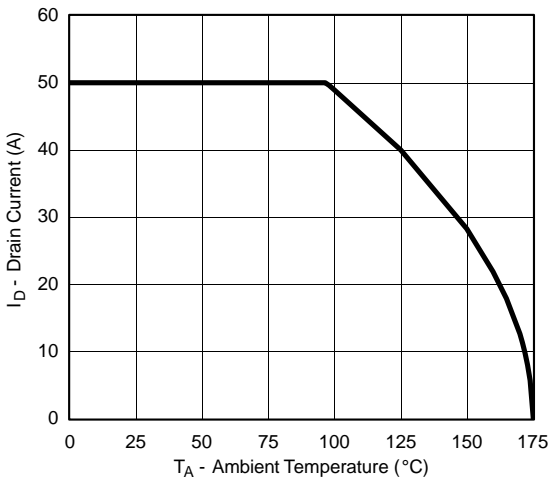
TYPICAL CHARACTERISTICS (25 °C unless noted)



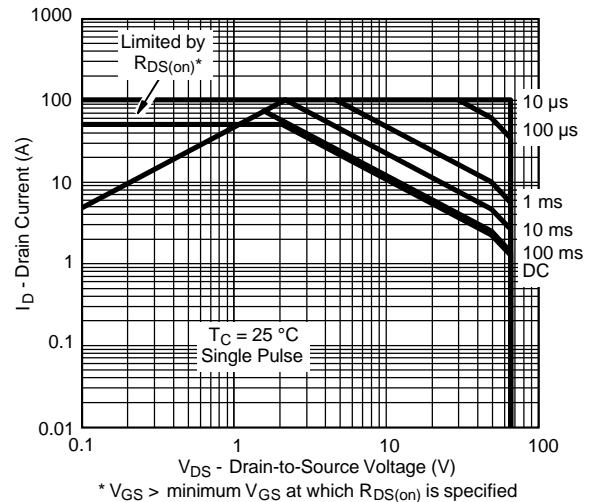
On-Resistance vs. Junction Temperature



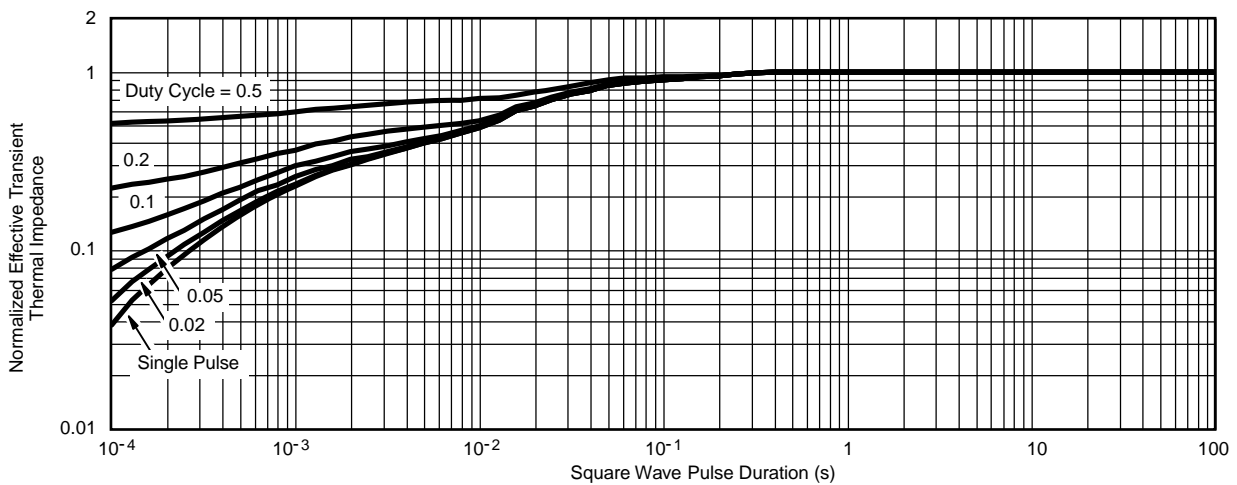
Source-Drain Diode Forward Voltage



Maximum Drain Current vs. Ambient Temperature



Safe Operating Area
* $V_{GS} >$ minimum V_{GS} at which $R_{DS(on)}$ is specified



Normalized Thermal Transient Impedance, Junction-to-Case

Test Circuit

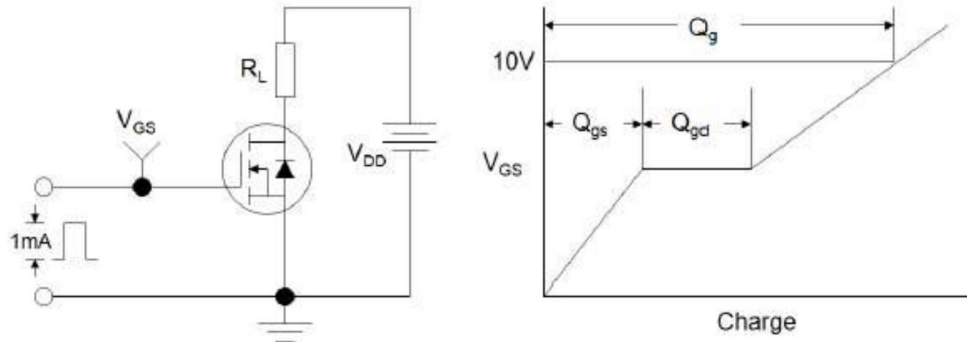


Figure 1: Gate Charge Test Circuit & Waveform

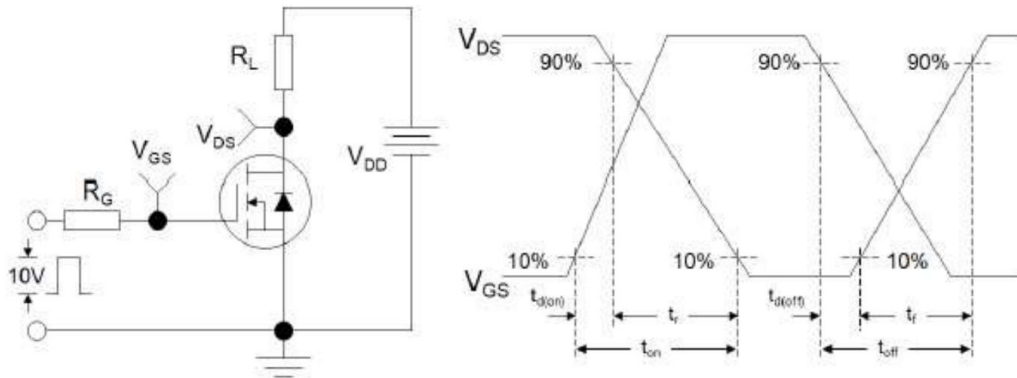


Figure 2: Resistive Switching Test Circuit & Waveforms

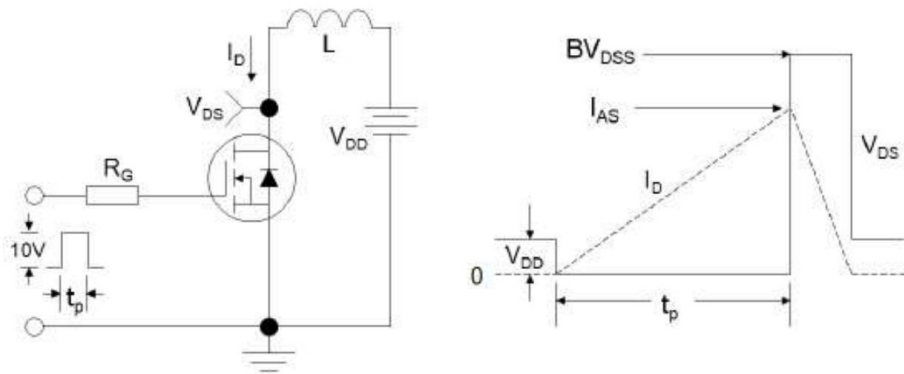
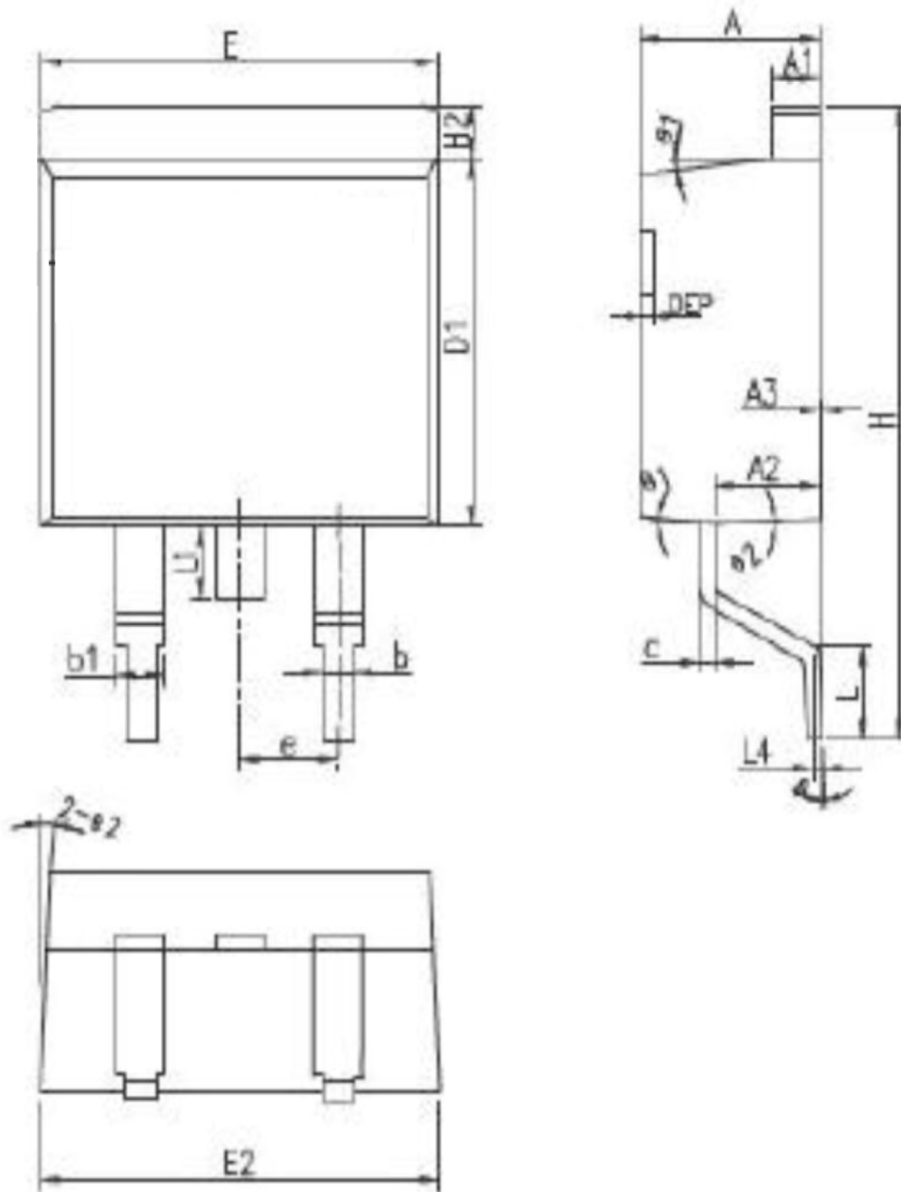


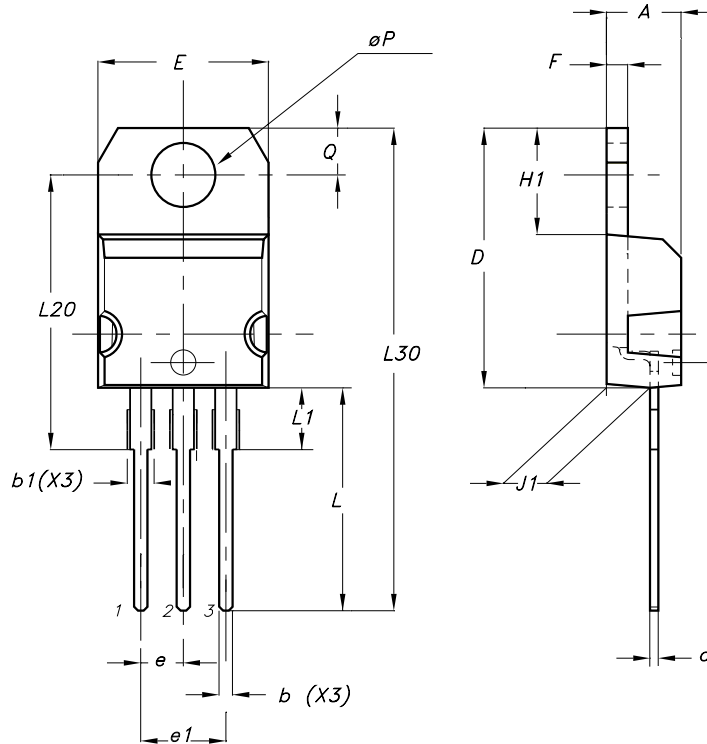
Figure 3: Unclamped Inductive Switching Test Circuit & Waveforms

PACKAGES DIMENSION : TO-263



| Symbol | Inches | | | Millimeters | | |
|--------|---------|-------|-------|-------------|-------|-------|
| | Min | Nom | Max | Min | Nom | Max |
| A | 4.40 | 4.57 | 4.57 | 0.173 | 0.180 | 0.185 |
| A1 | 1.22 | 1.27 | 1.27 | 0.048 | 0.050 | 0.052 |
| A2 | 2.59 | 2.69 | 2.69 | 0.102 | 0.106 | 0.110 |
| A3 | 0.00 | 0.10 | 0.10 | 0.000 | 0.004 | 0.008 |
| b | 0.77 | 0.813 | 0.813 | 0.030 | 0.032 | 0.035 |
| b1 | 1.20 | 1.270 | 1.270 | 0.047 | 0.050 | 0.054 |
| c | 0.34 | 0.381 | 0.381 | 0.013 | 0.015 | 0.019 |
| D1 | 8.60 | 8.70 | 8.99 | 0.339 | 0.343 | 0.354 |
| E | 10.00 | 10.16 | 10.16 | 0.394 | 0.400 | 0.404 |
| E2 | 10.00 | 10.10 | 10.10 | 0.394 | 0.398 | 0.402 |
| e | 2.54BSC | | | 0.100BSC | | |
| H | 14.70 | 15.10 | 15.50 | 0.579 | 0.594 | 0.610 |
| H2 | 1.17 | 1.27 | 1.40 | 0.046 | 0.050 | 0.055 |
| L | 2.00 | 2.30 | 2.60 | 0.079 | 0.091 | 0.102 |
| L1 | 1.45 | 1.55 | 1.70 | 0.057 | 0.061 | 0.067 |
| L4 | 0.25BSC | | | 0.010BSC | | |
| theta | 0° | 5° | 8° | 0° | 5° | 8° |
| theta1 | 5° | 7° | 9° | 5° | 7° | 9° |
| theta2 | 1° | 3° | 5° | 1° | 3° | 5° |
| DEP | 0.05 | 0.10 | 0.20 | 0.002 | 0.004 | 0.008 |

PACKAGES DIMENSION : TO-220



| DIM. | mm. | | | inch | | |
|------|-------|------|-------|-------|-------|-------|
| | MIN. | TYP | MAX. | MIN. | TYP. | MAX. |
| A | 4.40 | | 4.60 | 0.173 | | 0.181 |
| b | 0.61 | | 0.88 | 0.024 | | 0.034 |
| b1 | 1.15 | | 1.70 | 0.045 | | 0.067 |
| c | 0.49 | | 0.70 | 0.019 | | 0.027 |
| D | 15.25 | | 15.75 | 0.600 | | 0.620 |
| E | 10.0 | | 10.40 | 0.393 | | 0.409 |
| e | 2.4 | | 2.7 | 0.094 | | 0.106 |
| e1 | 4.95 | | 5.15 | 0.194 | | 0.203 |
| F | 1.23 | | 1.32 | 0.048 | | 0.051 |
| H1 | 6.2 | | 6.6 | 0.244 | | 0.260 |
| J1 | 2.40 | | 2.72 | 0.094 | | 0.107 |
| L | 13.0 | | 14.0 | 0.511 | | 0.551 |
| L1 | 3.5 | | 3.93 | 0.137 | | 0.154 |
| L20 | | 16.4 | | | 0.645 | |
| L30 | | 28.9 | | | 1.138 | |
| φP | 3.75 | | 3.85 | 0.147 | | 0.151 |
| Q | 2.65 | | 2.95 | 0.104 | | 0.116 |

Ordering information

| Order code | Package | Baseqty | Deliverymode |
|--------------|---------|---------|---------------|
| UMW IRFZ44NS | TO-263 | 800 | Tape and reel |
| UMW IRFZ44N | TO-220 | 1000 | Tube and box |

单击下面可查看定价，库存，交付和生命周期等信息

[>>UMW\(友台半导体\)](#)