

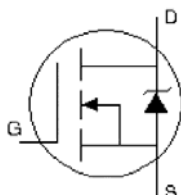
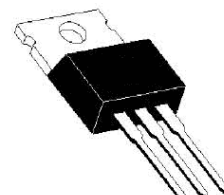
این دیتاشیت توسط توکل الکترونیک تهیه و ارائه شده است.

جهت مشاهده قیمت، موجودی و ثبت سفارش این قطعه به وبسایت توکل الکترونیک مراجعه فرمایید.



مشاهده قیمت و خرید

برای خرید و مشاهده سایر محصولات کلیک کنید

IRFZ34N  
HEXFET® Power MOSFETAdvanced Process Technology  
Dynamic dv/dt Rating  
175°C Operating Temperature  
Fast Switching  
Fully Avalanche Rated $V_{DS} = 55V$   
 $R_{DS(on)} = 0.040\Omega$   
 $I_D = 26A$ 

TO-220AB

### Description

Fifth Generation HEXFETs from international Rectifier utilize advanced processing techniques to achieve the lowest possible on-resistance per silicon area. This benefit, combined with the fast switching speed and ruggedized device design that HEXFET Power MOSFETs are well known for, provides the designer with an extremely efficient device for use in a wide variety of applications.

The TO-220 package is universally preferred for all commercial-industrial applications at power dissipation levels to approximately 50 watts. The low thermal resistance and low package cost of the TO-220 contribute to its wide acceptance throughout the industry.

### Absolute Maximum Ratings

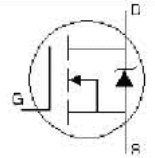
|                             | Parameter                                           | Max.                  | Units |
|-----------------------------|-----------------------------------------------------|-----------------------|-------|
| $I_D$ @ $T_c = 25^\circ C$  | Continuous Drain Current, $V_{GS}$ @ 10V            | 26                    | A     |
| $I_D$ @ $T_c = 100^\circ C$ | Continuous Drain Current, $V_{GS}$ @ 10V            | 18                    |       |
| $I_{DM}$                    | Pulsed Drain Current ①                              | 100                   |       |
| $P_D$ @ $T_c = 25^\circ C$  | Power Dissipation                                   | 56                    | W     |
|                             | Linear Derating Factor                              | 0.37                  | W/°C  |
| $V_{GS}$                    | Gate-to-Source Voltage                              | $\pm 20$              | V     |
| $E_{AS}$                    | Single Pulse Avalanche Energy ②                     | 110                   | mJ    |
| $I_{AR}$                    | Avalanche Current ①                                 | 16                    | A     |
| $E_{AR}$                    | Repetitive Avalanche Energy ①                       | 5.6                   | mJ    |
| Dv/dt                       | Peak Diode Recovery dv/dt ③                         | 4.6                   | V/ns  |
| $T_J$<br>$T_{STG}$          | Operating Junction and<br>Storage Temperature Range | -55 to +175           | °C    |
|                             | Soldering Temperature, for 10 seconds               | 300 (1.6mm from case) |       |
|                             | Mounting torque, 6-32 or M3 screw.                  | 10 lbf•in (1.1N•m)    |       |

### Thermal Resistance

|                 | Parameter           | Min. | Typ. | Max. | Units |
|-----------------|---------------------|------|------|------|-------|
| $R_{\theta JC}$ | Junction-to-Case    | -    | -    | 2.7  | °C/W  |
| $R_{\theta CS}$ | Case-to-Sink,       | -    | 0.50 | -    |       |
| $R_{\theta JA}$ | Junction-to-Ambient | -    | -    | 62   |       |

**Electrical Characteristics @ T<sub>J</sub>=25°C (unless otherwise specified)**

|                                        | Parameter                            | Min. | Typ.  | Max.  | Units | Conditions                                                       |
|----------------------------------------|--------------------------------------|------|-------|-------|-------|------------------------------------------------------------------|
| V <sub>(BR)DSS</sub>                   | Drain-to-Source Breakdown Voltage    | 55   | -     | -     | V     | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                       |
| ΔV <sub>(BR)DSS</sub> /ΔT <sub>J</sub> | Breakdown Voltage Temp. Coefficient  | -    | 0.052 | -     | V/°C  | Reference to 25°C, I <sub>D</sub> =1mA                           |
| R <sub>DS(ON)</sub>                    | Static Drain-to-Source On-Resistance | -    | -     | 0.040 | Ω     | V <sub>GS</sub> =10V, I <sub>D</sub> =16A④                       |
| V <sub>GS(th)</sub>                    | Gate Threshold Voltage               | 2.0  | -     | 4.0   | V     | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA         |
| g <sub>fs</sub>                        | Forward Transconductance             | 6.5  | -     | -     | s     | V <sub>DS</sub> =25V, I <sub>D</sub> =16A                        |
| I <sub>DSS</sub>                       | Drain-to-Source Leakage Current      | -    | -     | 25    | μA    | V <sub>DS</sub> =55V, V <sub>GS</sub> =0V                        |
|                                        |                                      | -    | -     | 250   |       | V <sub>DS</sub> =44V, V <sub>GS</sub> =0V, T <sub>J</sub> =150°C |
| I <sub>GSS</sub>                       | Gate-to-Source Forward Leakage       | -    | -     | 100   | nA    | V <sub>GS</sub> =20V                                             |
|                                        | Gate-to-Source Reverse Leakage       | -    | -     | -100  |       | V <sub>GS</sub> =-20V                                            |
| Q <sub>g</sub>                         | Total Gate Charge                    | -    | -     | 34    | nC    | I <sub>D</sub> =16A                                              |
| Q <sub>gs</sub>                        | Gate-to-Source Charge                | -    | -     | 6.8   |       | V <sub>DS</sub> =44V                                             |
| Q <sub>gd</sub>                        | Gate-to-Drain ("Miller") Charge      | -    | -     | 14    |       | V <sub>GS</sub> =10V, See Fig. 6 and 13④                         |
| t <sub>d(on)</sub>                     | Turn-On Delay Time                   | -    | 7.0   | -     | ns    | V <sub>DD</sub> =28V                                             |
| t <sub>r</sub>                         | Rise Time                            | -    | 49    | -     |       | I <sub>D</sub> =16A                                              |
| t <sub>d(off)</sub>                    | Turn-Off Delay Time                  | -    | 31    | -     |       | R <sub>G</sub> =18Ω                                              |
| t <sub>f</sub>                         | Fall Time                            | -    | 40    | -     |       | R <sub>D</sub> =1.8Ω, See Fig. 10④                               |
| LD                                     | Internal Drain Inductance            | -    | 4.5   | -     | nH    | Between lead, 6mm (0.25in.)                                      |
| LS                                     | Internal source inductance           | -    | 7.5   | -     |       | From package and center of die contact                           |
| C <sub>iss</sub>                       | Input Capacitance                    | -    | 700   | -     | pF    | V <sub>GS</sub> =0V                                              |
| C <sub>oss</sub>                       | Output Capacitance                   | -    | 240   | -     |       | V <sub>DS</sub> =25V                                             |
| Cr <sub>ss</sub>                       | Reverse Transfer Capacitance         | -    | 100   | -     |       | F=1.0MHz, See Fig.5                                              |


**Source-Drain Ratings and Characteristics**

|                 | Parameter                              | Min.                                                                               | Typ. | Max. | Units | Conditions                                                       |
|-----------------|----------------------------------------|------------------------------------------------------------------------------------|------|------|-------|------------------------------------------------------------------|
| I <sub>S</sub>  | Continuous Source Current (Body Diode) | -                                                                                  | -    | 26   | A     | MOSFET symbol showing the integral reverse p-n junction diode.   |
| I <sub>SM</sub> | Diode Forward Voltage                  | -                                                                                  | -    | 100  |       |                                                                  |
| V <sub>SD</sub> | Reverse Recovery Time                  | -                                                                                  | -    | 1.6  | V     | T <sub>J</sub> =25°C, I <sub>S</sub> =16A, V <sub>GS</sub> =0V ④ |
| t <sub>rr</sub> | Reverse Recovery Charge                | -                                                                                  | 57   | 86   | ns    | T <sub>J</sub> =25°C, I <sub>F</sub> =16A                        |
| Q <sub>rr</sub> | Reverse Recovery Charge                | -                                                                                  | 130  | 200  | nC    | ti/dt=100A/μs ④                                                  |
| t <sub>on</sub> | Forward Turn-On Time                   | Intrinsic turn-on time is negligible (turn-on is dominated by L s+L <sub>D</sub> ) |      |      |       |                                                                  |

**Notes:**

- ① Repetitive rating; pulse width limited by max. junction temperature. (See fig. 11)
- ② V<sub>DD</sub>=25V, starting T<sub>J</sub>=25°C, L=610μH, R<sub>G</sub>=25Ω, I<sub>AS</sub>=16A. (See Figure 12)
- ③ I<sub>SD</sub>≤16A, di/dt ≤ 420A/μs, V<sub>DD</sub>≤V<sub>(BR)DSS</sub>, T<sub>J</sub>≤175°C.
- ④ Pulse width ≤300μs; duty cycle μs2%.

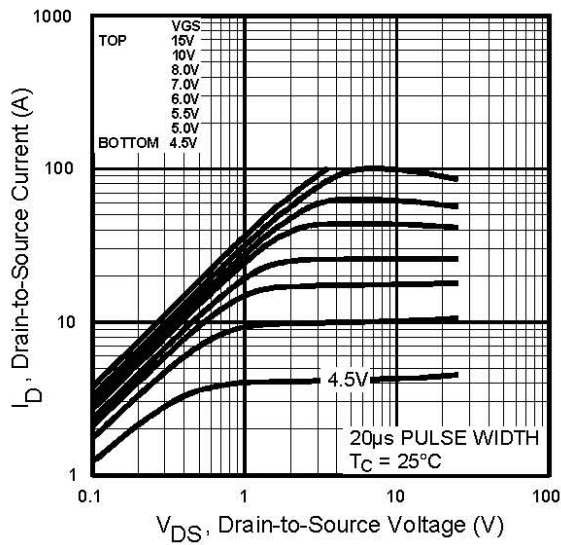


Fig 1. Typical Output Characteristics,  
 $T_c = 25^\circ\text{C}$

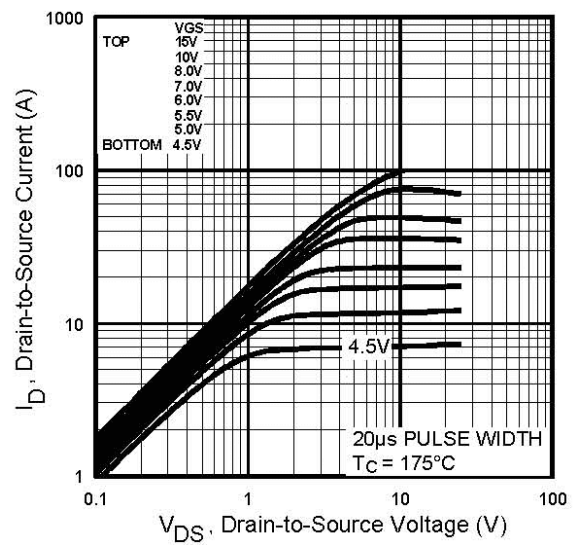


Fig 2. Typical Output Characteristics,  
 $T_c = 175^\circ\text{C}$

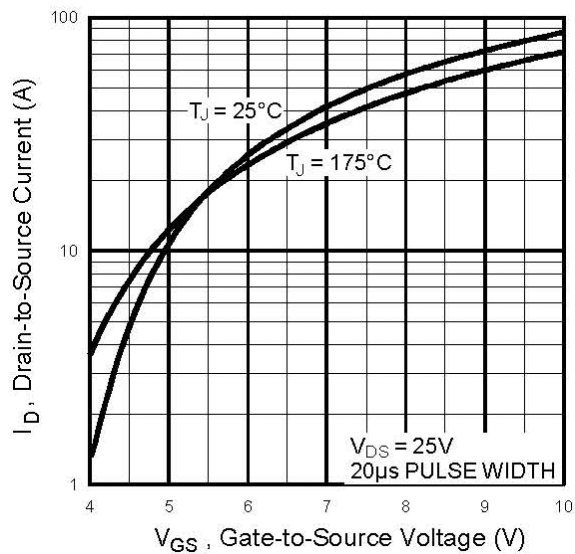


Fig 3. Typical Transfer Characteristics

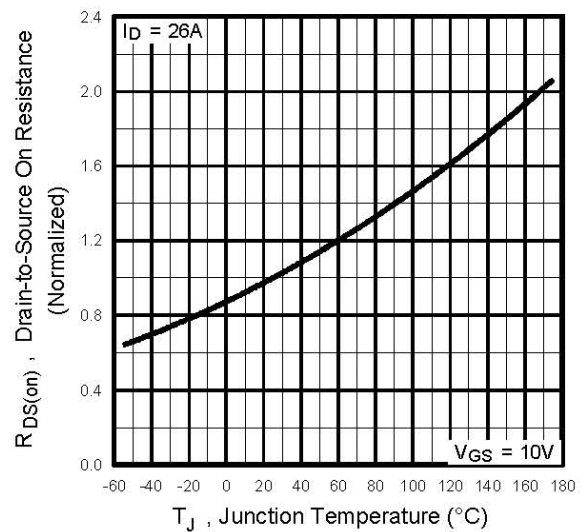


Fig 4. Normalized On-Resistance  
Vs. Temperature

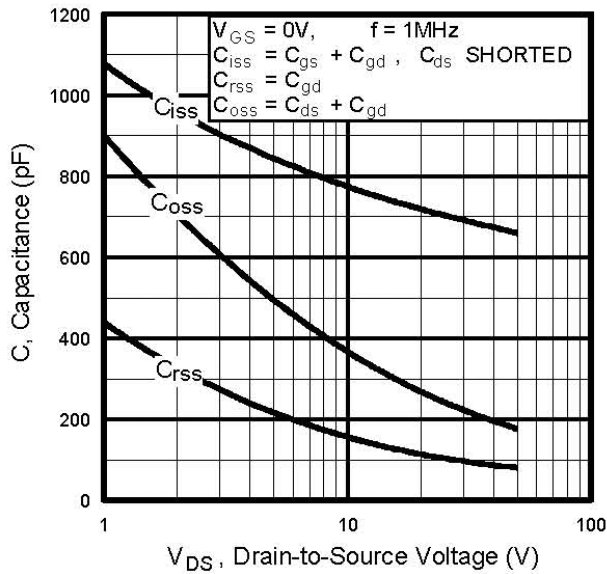


Fig 5. Typical Capacitance Vs.  
Drain-to-Source Voltage

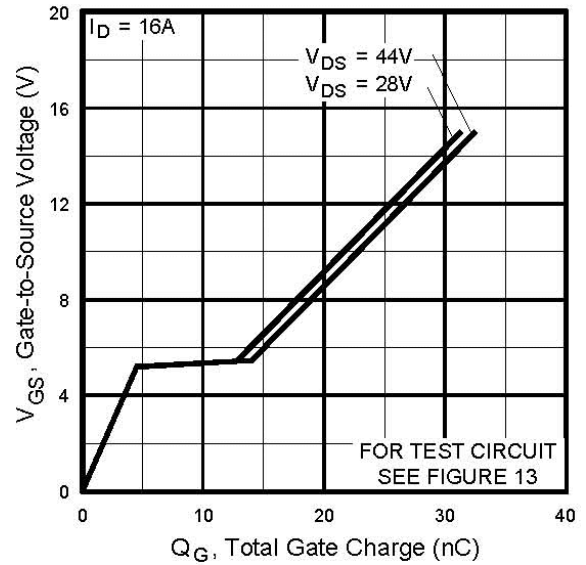


Fig 6. Typical Gate Charge Vs.  
Gate-to-Source Voltage

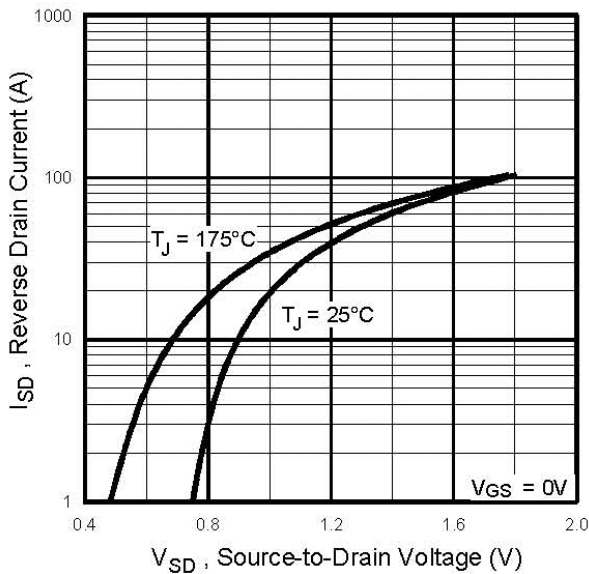
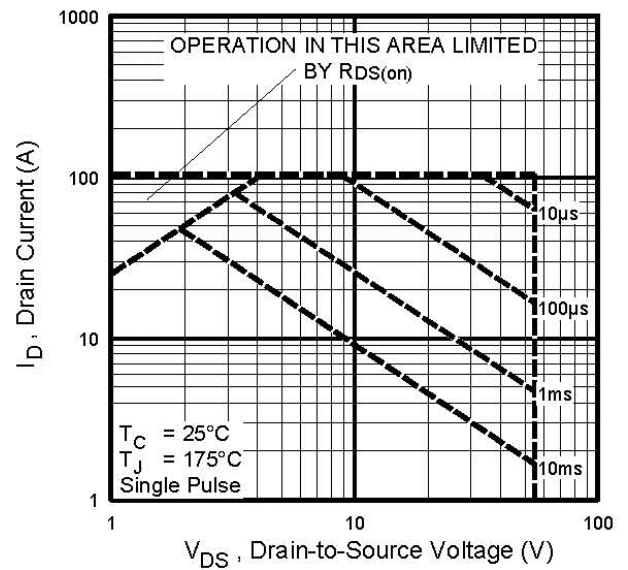


Fig 7. Typical Source-Drain Diode  
Forward Voltage



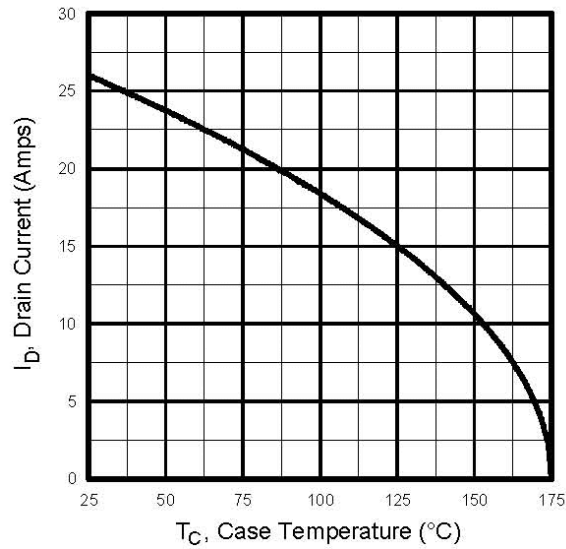


Fig 9. Maximum Drain Current Vs.  
Case Temperature

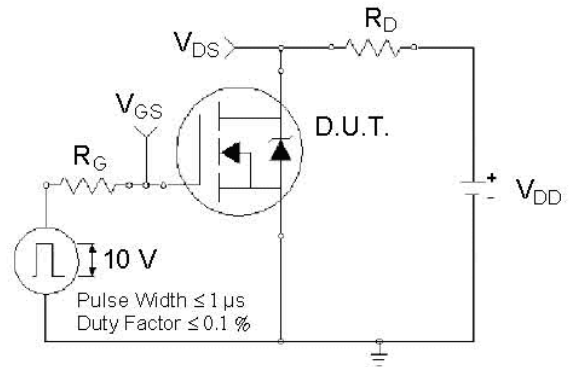


Fig 10a. Switching Time Test Circuit

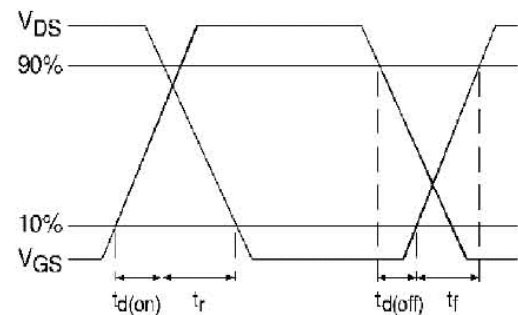


Fig 10b. Switching Time Waveforms

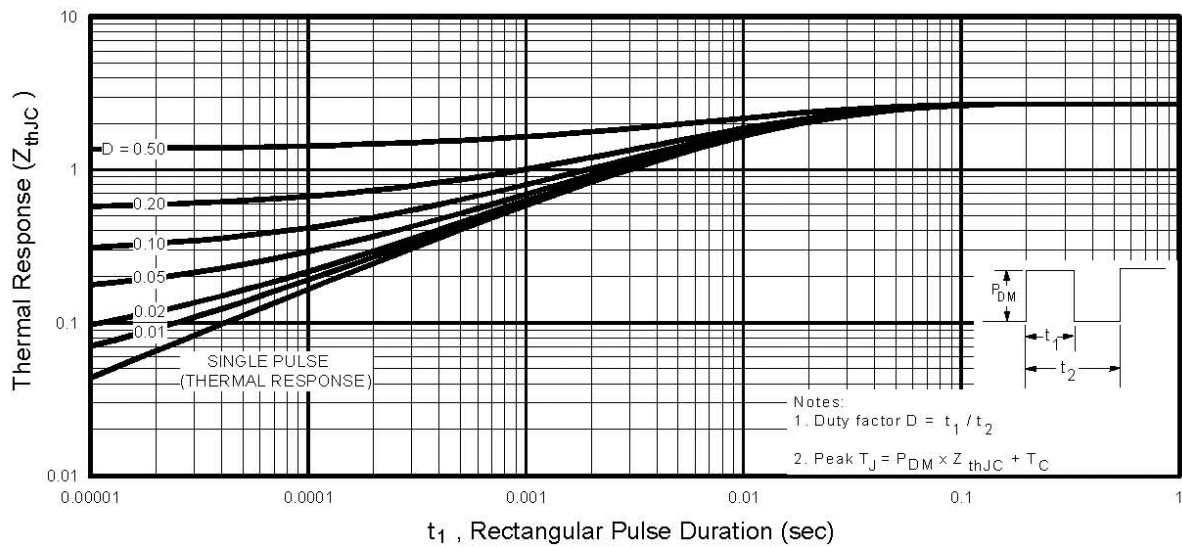


Fig 11. Maximum Effective Transient Thermal Impedance, Junction-to-Case

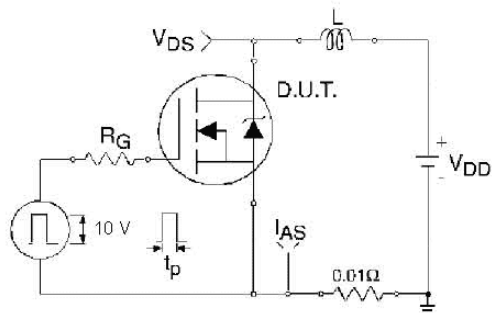


Fig 12a. Unclamped Inductive Test Circuit

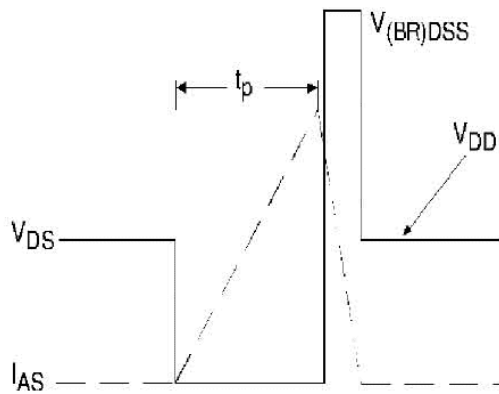


Fig 12b. Unclamped Inductive Waveforms

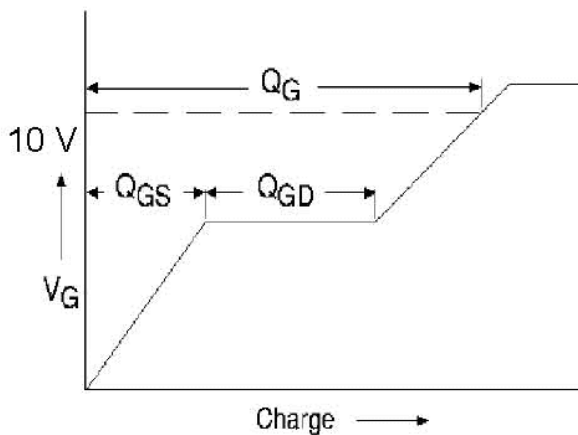


Fig 13a. Basic Gate Charge Waveform

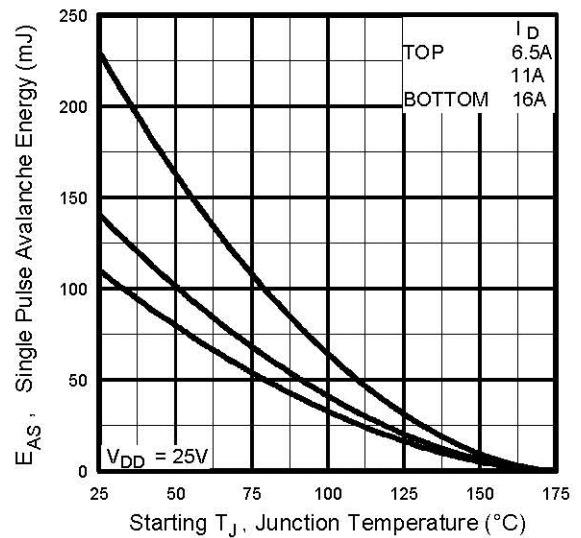


Fig 12c. Maximum Avalanche Energy  
Vs. Drain Current

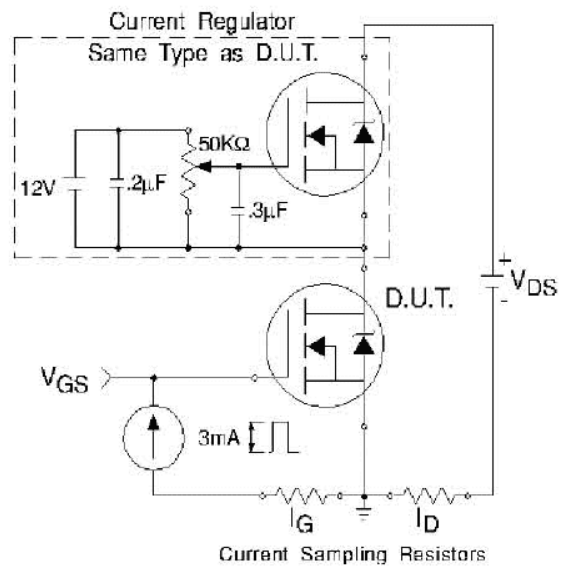


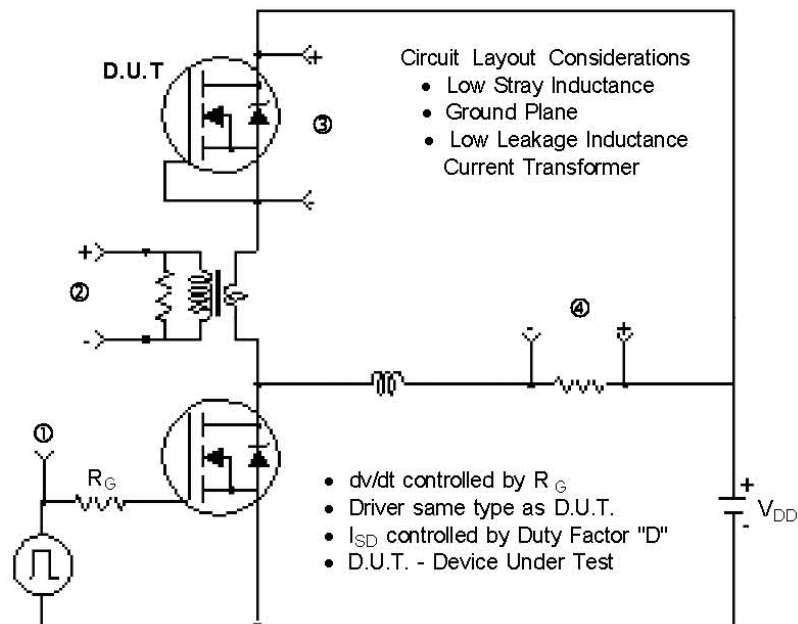
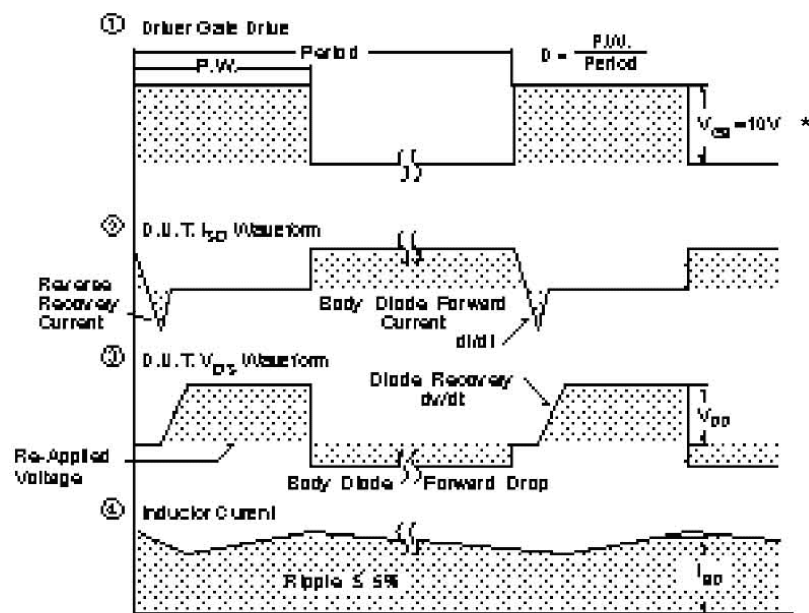
Fig 13b. Gate Charge Test Circuit

Appendix A: Figure 14, Peak Diode Recovery dv/dt Test Circuit

Appendix B: Package Outline Mechanical Drawing

Appendix C: Part Marking Information

Peak Diode Recovery  $dv/dt$  Test Circuit

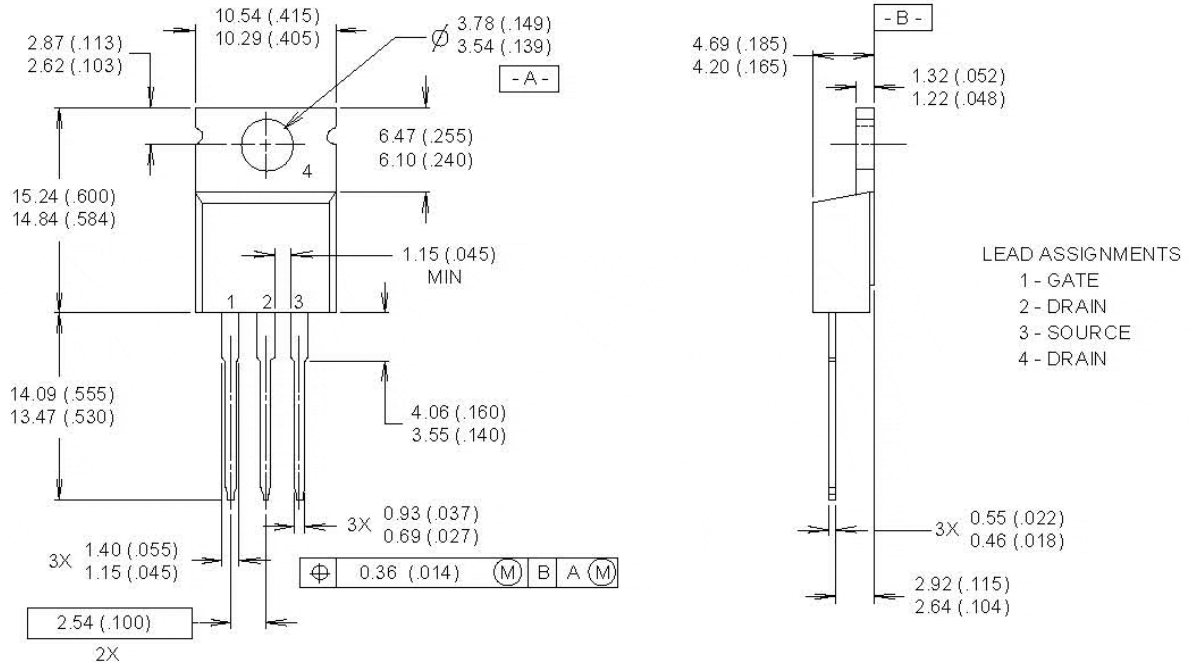


\*  $V_{GS} = 5V$  for Logic Level Devices

Fig 14. For N-Channel HEXFETS

### TO-220AB Outline

Dimensions are shown in millimeters (inches)



#### NOTES:

- 1 DIMENSIONING & TOLERANCING PER ANSI Y14.5M, 1982.
- 2 CONTROLLING DIMENSION : INCH
- 3 OUTLINE CONFORMS TO JEDEC OUTLINE TO-220AB.
- 4 HEATSINK & LEAD MEASUREMENTS DO NOT INCLUDE BURRS.