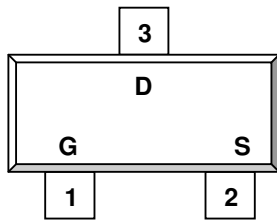


**PIN CONFIGURATION
SOT-23**

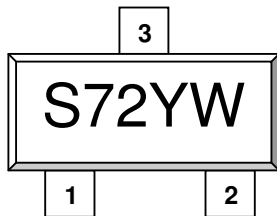


1.Gate 2.Source 3.Drain

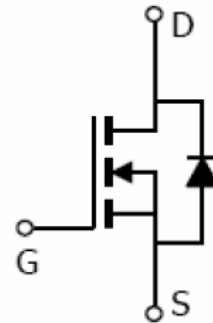
FEATURE

- 60V/0.30A, $R_{DS(ON)} = 5\Omega @V_{GS} = 10V(Typ.)$
- 60V/0.25A, $R_{DS(ON)} = 7\Omega @V_{GS} = 4.5V$
- Super high density cell design for extremely low $R_{DS(ON)}$
- Exceptional on-resistance and Maximum DC current capability
- SOT-23 package design

**PART MARKING
SOT-23**



Y : Year Code W : Process Code



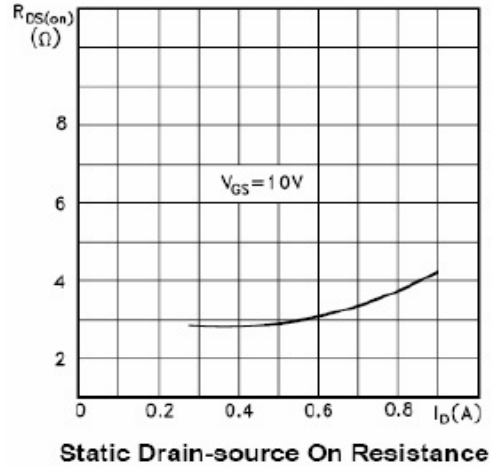
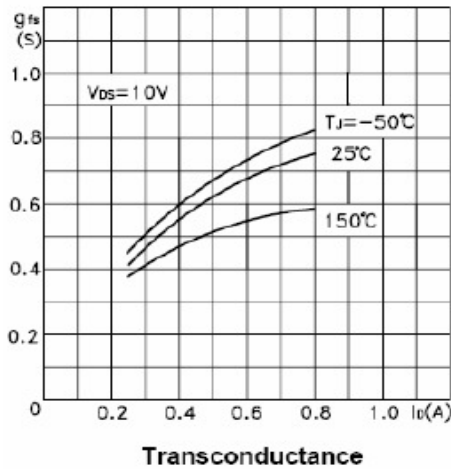
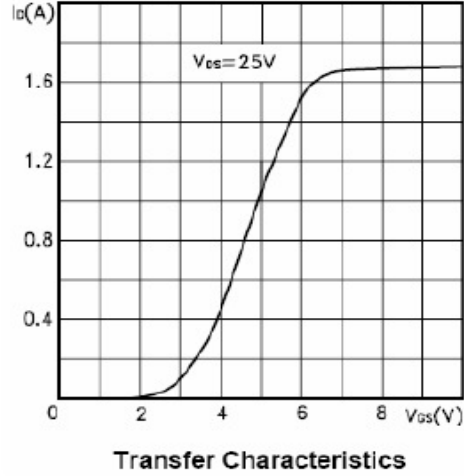
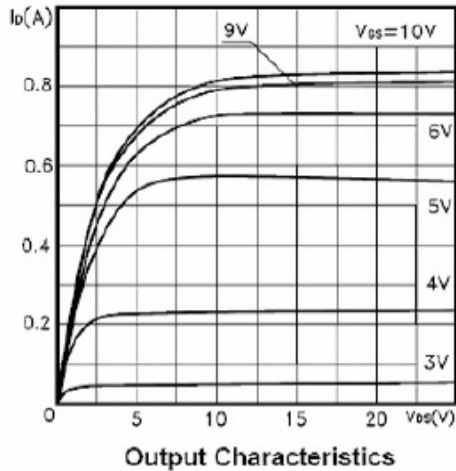
ABSOLUTE MAXIMUM RATINGS (Ta = 25°C Unless otherwise noted)

| Parameter | Symbol | Typical | Unit |
|--|----------------------|---------|------|
| Drain-Source Voltage | V _{DSS} | 60 | V |
| Gate-Source Voltage | V _{GSS} | ±20 | V |
| Continuous Drain Current (T _J =150°C) | I _D | 0.3 | A |
| | T _A =25°C | | |
| Pulsed Drain Current | I _{DM} | 1.0 | A |
| Power Dissipation | P _D | 0.35 | W |
| | T _A =25°C | | |
| Operation Junction Temperature | T _J | 150 | °C |
| Storage Temperature Range | T _{STG} | -55/150 | °C |
| Thermal Resistance-Junction to Ambient | R _{θJA} | 375 | °C/W |

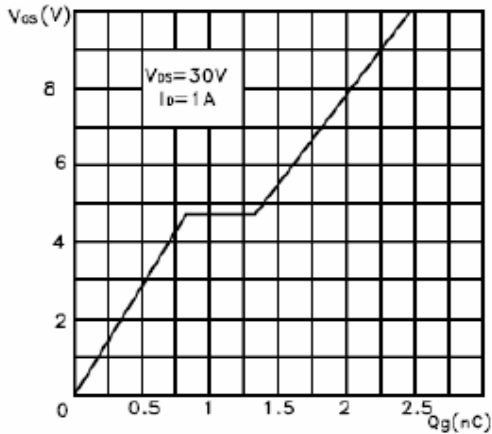
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$ Unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---------------------------------|-----------------------|--|-----|------|-----------|----------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}=0V, I_D= 250\mu A$ | 60 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D= 250\mu A$ | 0.8 | | 2.5 | V |
| Gate Leakage Current | I_{GSS} | $V_{DS}=0V, V_{GS}=\pm 12V$ | | | ± 100 | nA |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}= 45V, V_{GS}=0V$ | | | 1 | uA |
| | | $V_{DS}= 45V, V_{GS}=0V$ $T_J=125^\circ\text{C}$ | | | 10 | |
| On-State Drain Current | $I_{SD(on)}$ | | | | 0.35 | A |
| On-State Drain Current (pulsed) | $I_{SDM(2)}$ | | | | 1.4 | |
| Drain-source On-Resistance | $R_{DS(on)}$ | $V_{GS}=10.0V, I_D=0.50A$ | | 2.50 | 6.0 | Ω |
| | | $V_{GS}=4.5V, I_D= 0.25A$ | | 3.30 | 7.0 | |
| Forward Transconductance | $G_{fs(1)}$ | $V_{DS}=10V, I_D= 0.5A$ | | 0.6 | | S |
| Diode Forward Voltage | $V_{SD(1)}$ | $I_S=0.12A, V_{GS}=0V$ | | 0.85 | 1.5 | V |
| Dynamic | | | | | | |
| Total Gate Charge | Q_g | $V_{DS}=30V, V_{GS}=4.5V$ $I_D= 1.0A$ | | 1.4 | 2.0 | nC |
| Gate-Source Charge | Q_{gs} | | | 0.8 | | |
| Gate-Drain Charge | Q_{gd} | | | 0.5 | | |
| Input Capacitance | C_{iss} | $V_{DS}=25V, f=1\text{MHz},$ $V_{GS}=0$ | | 43 | | pF |
| Output Capacitance | C_{oss} | | | 20 | | |
| Reverse Transfer Capacitance | C_{rss} | | | 6 | | |
| Turn-On Time | $t_{d(on)}$ t_r | $V_{DD}=30V$ $I_D=0.5A$ $V_{GS}=4.5V$ $R_G=4.7\Omega$ | | 6 | | nS |
| | | | | 15 | | |
| Turn-Off Time | $t_{d(off)}$ t_f | | | 6 | 13 | |
| | | | | 7 | 9 | |

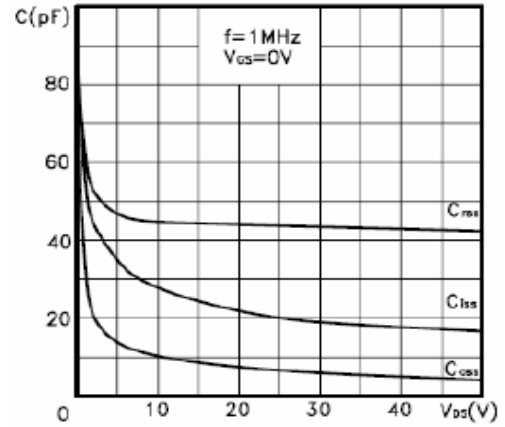
TYPICAL CHARACTERISTICS (25°C Unless noted)



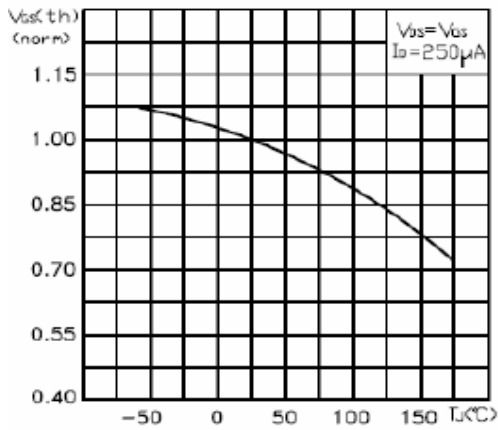
TYPICAL CHARACTERISTICS



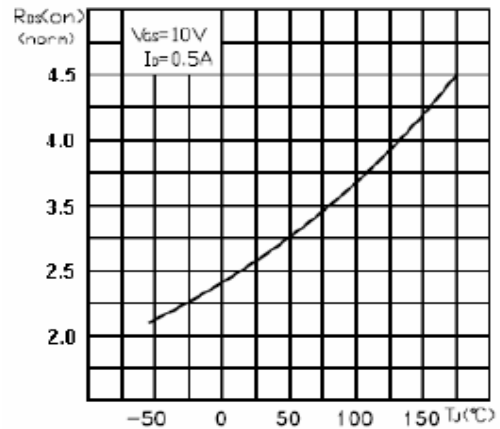
Gate Charge vs Gate-source Voltage



Capacitance Variations

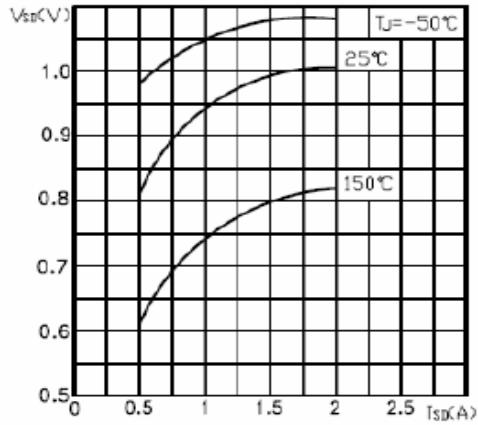


Normalized Gate Threshold Voltage vs Temperature

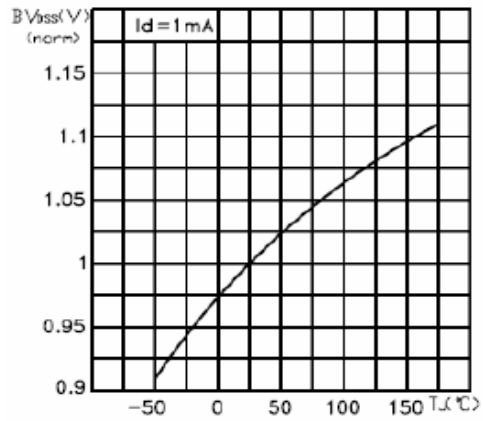


Normalized On Resistance vs Temperature

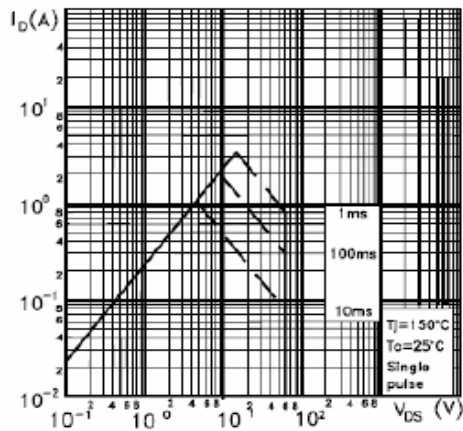
TYPICAL CHARACTERISTICS



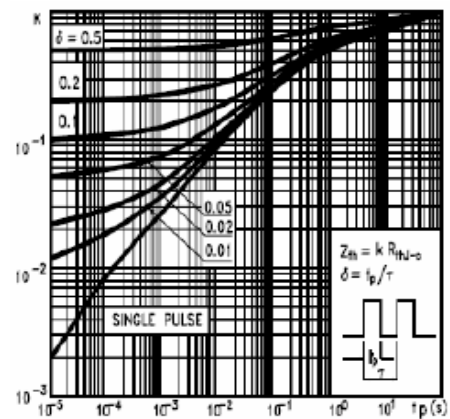
Source-Drain Forward



Normalized BVDSS vs Temperature

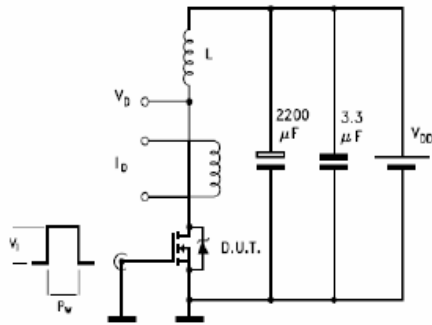


Safe Operating Area

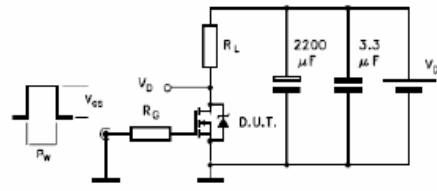


Thermal Impedance

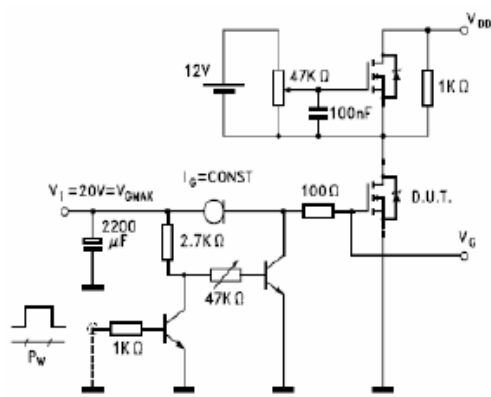
TIPYCAL TESTING CIRCUIT



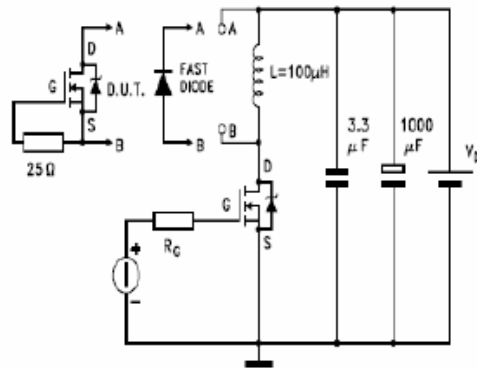
Unclamped Inductive Load Test



Switching Times Test Circuit

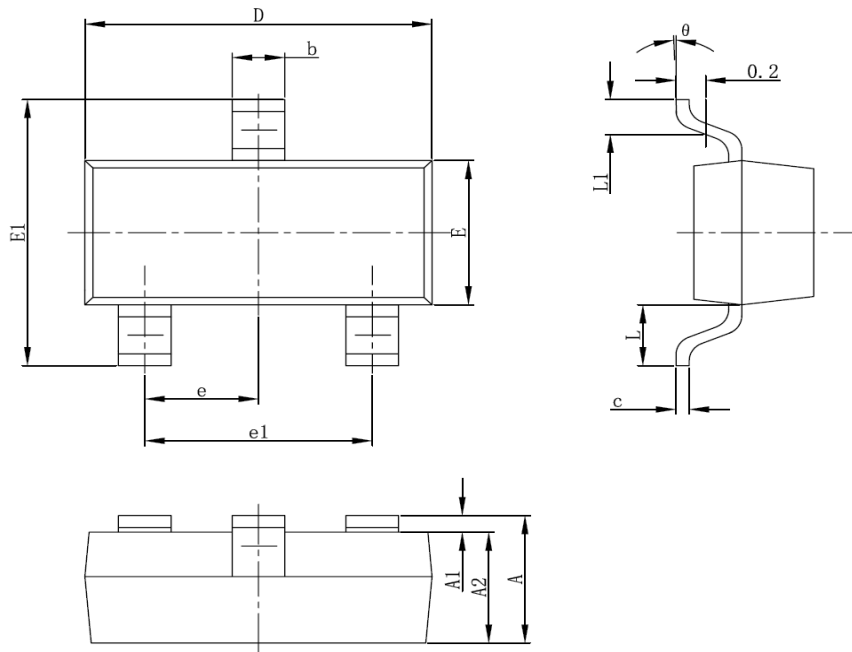


Gate Charge Test Circuit



Test Circuit For Inductive Load Switching and Diode Recovery Times

SOT-23 PACKAGE OUTLINE



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 2.800 | 3.000 | 0.110 | 0.118 |
| E | 1.200 | 1.400 | 0.047 | 0.055 |
| E1 | 2.250 | 2.550 | 0.089 | 0.100 |
| e | 0.950TYP | | 0.037TYP | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.550REF | | 0.022REF | |
| L1 | 0.300 | 0.500 | 0.012 | 0.020 |
| theta | 0° | 8° | 0° | 8° |