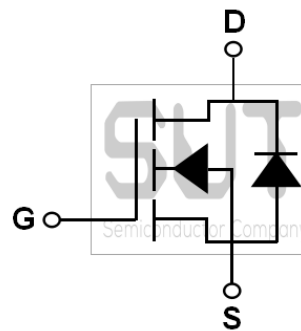
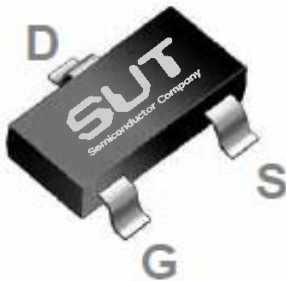


N-Channel 30-V_(D-S) MOSFET

| PRODUCT SUMMARY | | |
|-----------------------|-------------------------------|--------------------|
| B _{VDSS} (V) | R _{DS(on)} (mΩ)(MAX) | I _D (A) |
| 30 | 24@V _{GS} =10V | 6.5 |

SOT23 Pin Configuration



ABSOLUTE MAXIMUM RATINGS(T_C=25°C UNLESS OTHERWISE NOTED)

| Parameter | Symbol | Rating | Units |
|--|------------------|------------|-------|
| Drain-Source Voltage | V _{DS} | 30 | V |
| Gate-Source Voltage | V _{GS} | ±20 | V |
| Drain Current-Continuous (T _C =25°C) | I _D | 6.5 | A |
| Drain Current-Continuous (T _C =100°C) | | 4.1 | A |
| Drain Current-Pulsed ¹ | I _{DM} | 26 | A |
| Single Pulse Avalanche Energy ² | EAS | 32 | mJ |
| Single Pulse Avalanche Current ² | IAS | 8 | A |
| Power Dissipation (T _C =25°C) | P _D | 1.56 | W |
| Power Dissipation-Derate above 25°C | | 0.012 | W/°C |
| Storage Temperature Range | T _{STG} | -55 to 150 | °C |
| Operating Junction Temperature Range | T _J | -55 to 150 | °C |

THERMAL CHARACTERISTICS

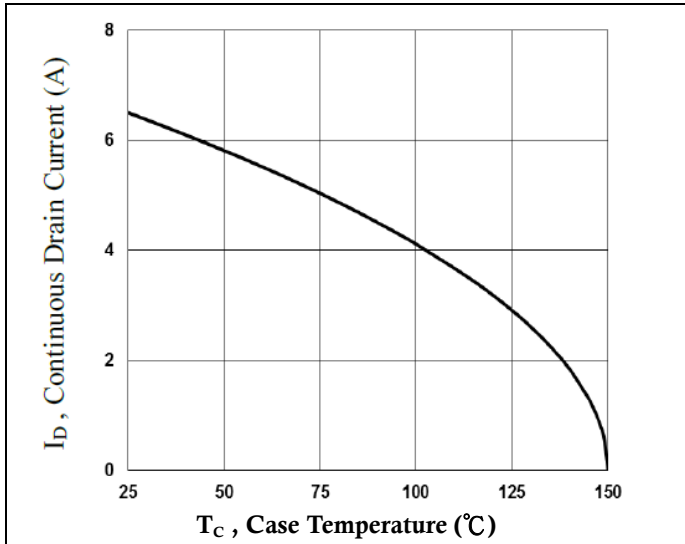
| Parameter | Symbol | Typ. | Max. | Unit |
|--|------------------|------|------|------|
| Thermal Resistance Junction to ambient | R _{θJA} | --- | 80 | °C/W |

| ELECTRICAL CHARACTERISTICS (T _J =25°C UNLESS OTHERWISE NOTED) | | | | | | |
|--|-------------------------------------|--|------|------|------|-------|
| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
| Off Characteristics | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} =0V, I _D =250uA | 30 | --- | --- | V |
| BV _{DSS} Temperature Coefficient | ΔBV _{DSS} /ΔT _J | Reference to 25°C, I _D =1mA | --- | 0.04 | --- | V/°C |
| Drain-Source Leakage Current | I _{DSS} | V _{GS} =0V, V _{DS} =30V, T _J =25°C | --- | --- | 1 | uA |
| | | V _{GS} =0V, V _{DS} =24V, T _J =125°C | --- | --- | 10 | uA |
| Gate-Source Leakage Current | I _{GSS} | V _{GS} =±20V, V _{DS} =0V | --- | --- | ±100 | nA |
| On Characteristics | | | | | | |
| Static Drain-Source On-Resistance ³ | R _{DS(ON)} | V _{GS} =10V, I _D =6A | --- | 20 | 24 | mΩ |
| | | V _{GS} =4.5V, I _D =4A | --- | 27 | 34 | mΩ |
| Gate Threshold Voltage | V _{GS(th)} | V _{GS} =V _{DS} , I _D =250uA | 1.2 | 1.6 | 2.5 | V |
| V _{GS(th)} Temperature Coefficient | ΔV _{GS(th)} | | --- | -4.0 | --- | mV/°C |
| Forward Transconductance | g _{fs} | V _{DS} =10V, I _D =4A | --- | 6.5 | --- | S |
| Dynamic and Switching Characteristics | | | | | | |
| Total Gate Charge ^{3, 4} | Q _g | V _{GS} =4.5V, V _{DS} =15V, I _D =6A | --- | 4.1 | 8.0 | nC |
| Gate-Source Charge ^{3, 4} | Q _{gs} | | --- | 1.0 | 2.0 | |
| Gate-Drain Charge ^{3, 4} | Q _{gd} | | --- | 2.1 | 4.0 | |
| Turn-On Delay Time ^{3, 4} | T _{d(on)} | V _{GS} =10V, V _{DD} =15V, R _G =6Ω, I _D =1A | --- | 2.8 | 5.0 | ns |
| Rise Time ^{3, 4} | T _r | | --- | 7.2 | 14 | |
| Turn-Off Delay Time ^{3, 4} | T _{d(off)} | | --- | 15.8 | 30 | |
| Fall Time ^{3, 4} | T _f | | --- | 4.6 | 9.0 | |
| Input Capacitance | C _{iss} | V _{GS} =0V, V _{DS} =25V, F=1MHz | --- | 345 | 500 | pF |
| Output Capacitance | C _{oss} | | --- | 55 | 80 | |
| Reverse Transfer Capacitance | C _{rss} | | --- | 32 | 45 | |
| Gate resistance | R _g | V _{GS} =0V, V _{DS} =0V, F=1MHz | --- | 3.2 | 6.4 | Ω |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| Continuous Source Current | I _S | V _G =V _D =0V, Force Current | --- | --- | 6.5 | A |
| Pulsed Source Current ³ | I _{SM} | | --- | --- | 26 | A |
| Diode Forward Voltage ³ | V _{SD} | V _{GS} =0V, I _S =1A, T _J =25°C | --- | --- | 1.0 | V |
| Reverse Recovery Time | t _{rr} | V _{GS} =0V, I _S =1A, di/dt=100A/μs, T _J =25°C | --- | --- | --- | ns |
| Reverse Recovery Charge | Q _{rr} | | --- | --- | --- | nC |

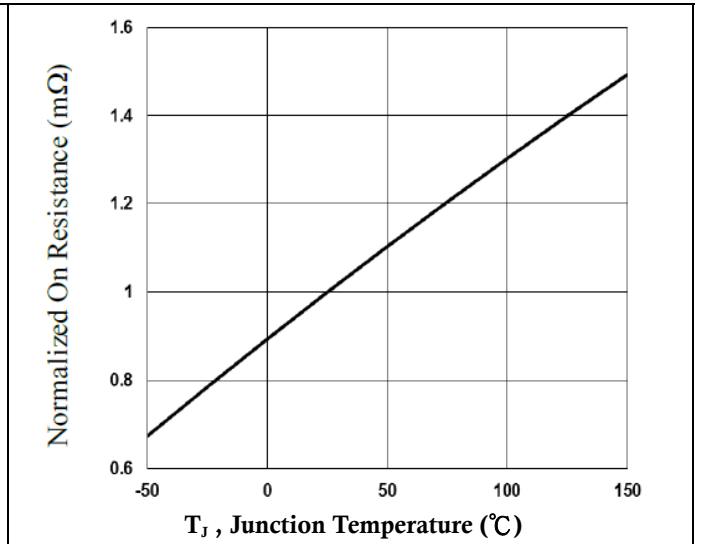
Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. V_{GS}=10V, V_{DD}=25V, L=1mH, I_{AS}=8A, R_G=25Ω, Starting T_J=25°C.
3. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
4. Essentially independent of operating temperature.

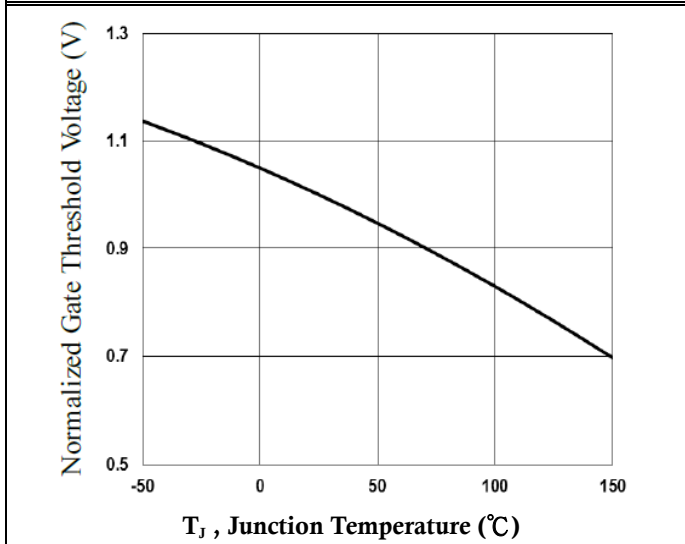
30V N-Channel MOSFETs



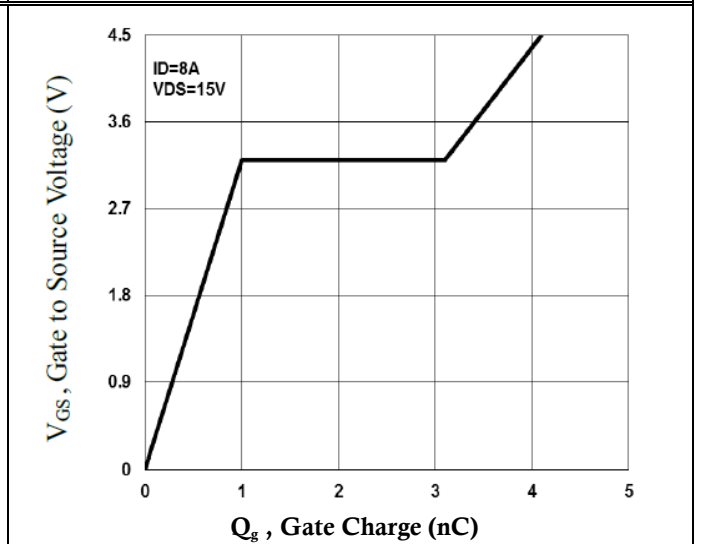
Continuous Drain Current vs. T_C



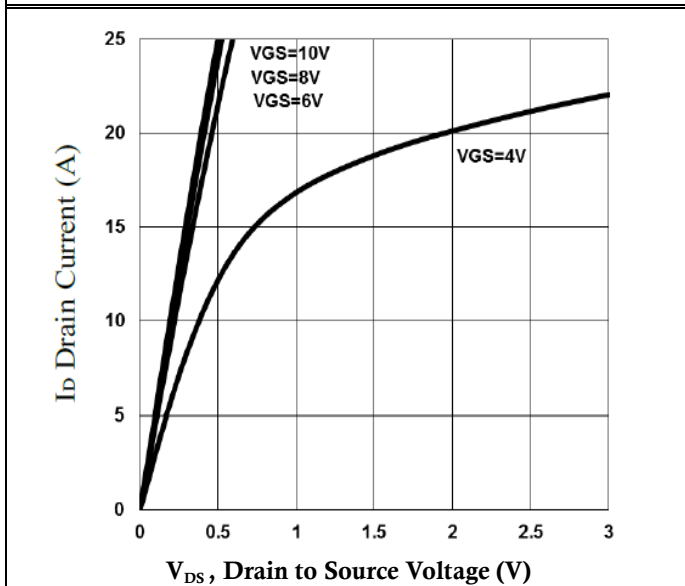
Normalized $R_{DS(ON)}$ vs. T_J



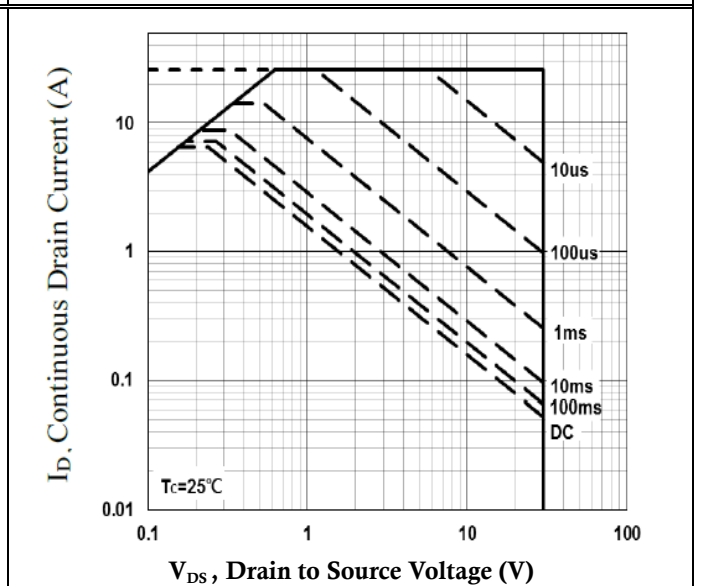
Normalized V_{th} vs. T_J



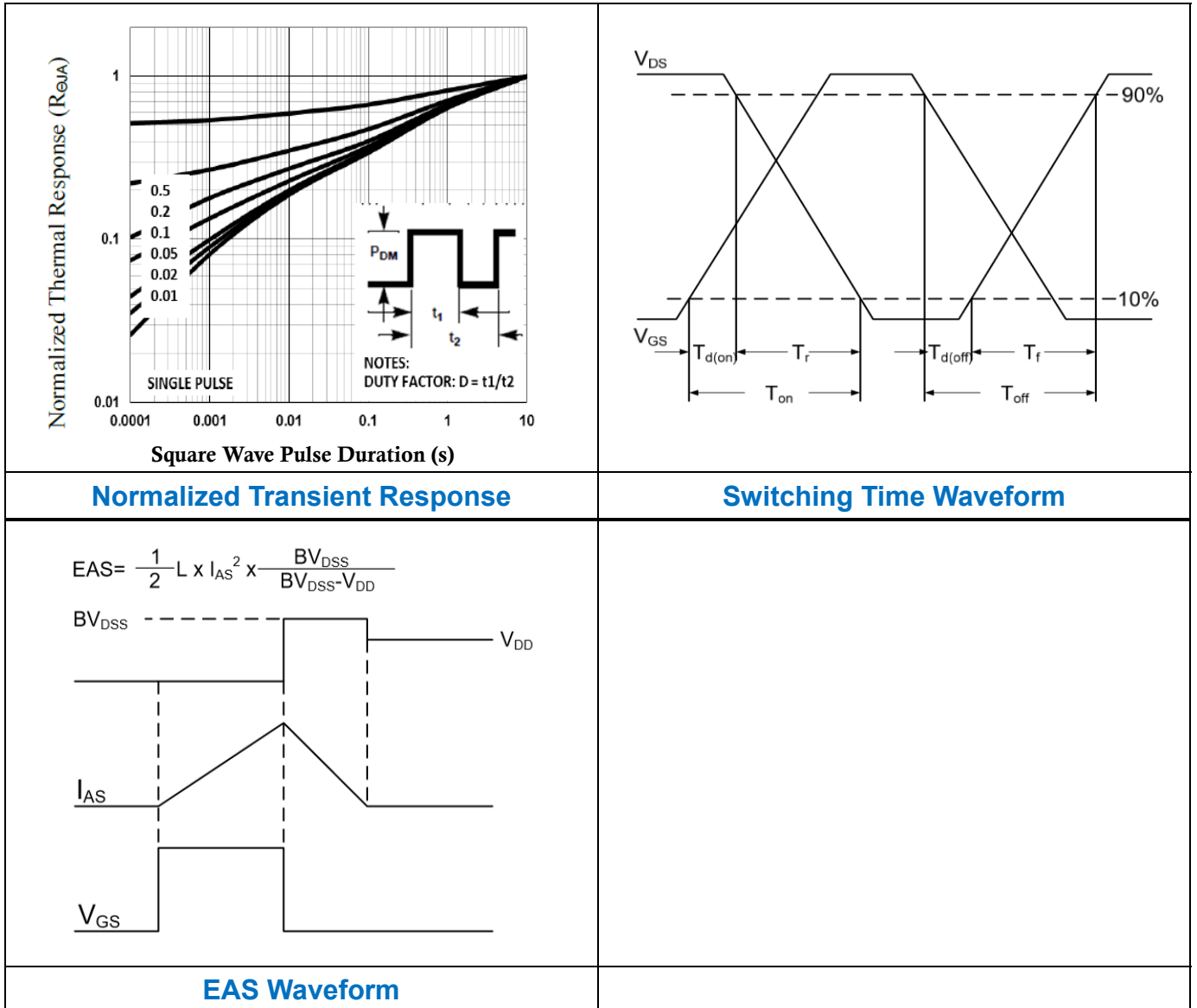
Gate Charge Waveform



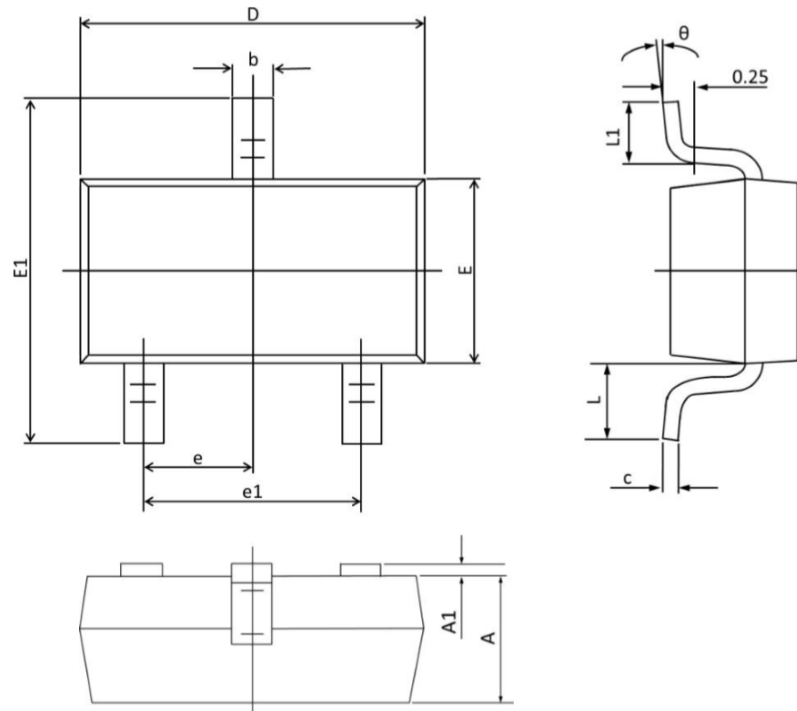
On Region Characteristics



Maximum Safe Operation Area



SOT23 PACKAGE INFORMATION



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | MAX | MIN | MAX | MIN |
| A | 1.000 | 0.900 | 0.039 | 0.035 |
| A1 | 0.100 | 0.000 | 0.004 | 0.000 |
| b | 0.500 | 0.300 | 0.020 | 0.012 |
| c | 0.110 | 0.090 | 0.004 | 0.003 |
| D | 3.000 | 2.800 | 0.118 | 0.110 |
| E | 1.400 | 1.200 | 0.055 | 0.047 |
| E1 | 2.550 | 2.250 | 0.100 | 0.089 |
| e | 0.950(TYP) | | 0.037(TYP) | |
| e1 | 2.000 | 1.800 | 0.079 | 0.071 |
| L | 0.550(REF) | | 0.022(REF) | |
| L1 | 0.500 | 0.300 | 0.020 | 0.012 |
| θ | 7° | 1° | 7° | 1° |