

N-Channel Enhancement Mode MOSFET

TDM3430

DESCRIPTION

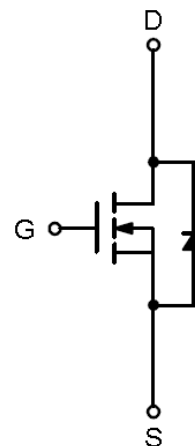
The TDM3430 uses advanced trench technology to provide excellent RDS(ON) and low gate charge. This device is suitable for use as a load switch or in PWM applications.

GENERAL FEATURES

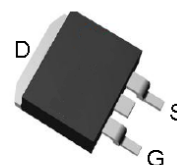
- RDS(ON) < 2.3mΩ @ VGS=4.5V
RDS(ON) < 1.7mΩ @ VGS=10V
- High Power and current handling capability
- Lead free product is available
- Surface Mount Package

Application

- PWM applications
- Load switch
- Power management
- Jump Starter



N-Channel MOSFET



Top View of TO-263-3

ABSOLUTE MAXIMUM RATINGS(TA=25°C unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|---|---------------|------------|------|
| Drain-Source Voltage | VDS | 40 | V |
| Gate-Source Voltage | VGS | ±20 | V |
| Drain Current @ Continuous | ID (TA=25°C) | 40 | A |
| | ID (TA=70°C) | 30 | A |
| Drain Current @ Current-Pulsed (Note 1) | IDM (Tc=25°C) | 400 | A |
| Drain Current @ Continuous | ID (Tc=25°C) | 180 | A |
| | ID (Tc=100°C) | 160 | A |
| Maximum Power Dissipation (TA=25°C) | Pd | 2.7 | W |
| Maximum Power Dissipation (Tc=25°C) | Pd | 300 | W |
| Maximum Operating Junction Temperature | TJ | 150 | °C |
| Storage Temperature Range | TSTG | -55 To 150 | °C |

THERMAL CHARACTERISTICS

| | | | |
|--|------|----|------|
| Thermal Resistance, Junction-to-Ambient (Note 1) | RθJA | 50 | °C/W |
|--|------|----|------|

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

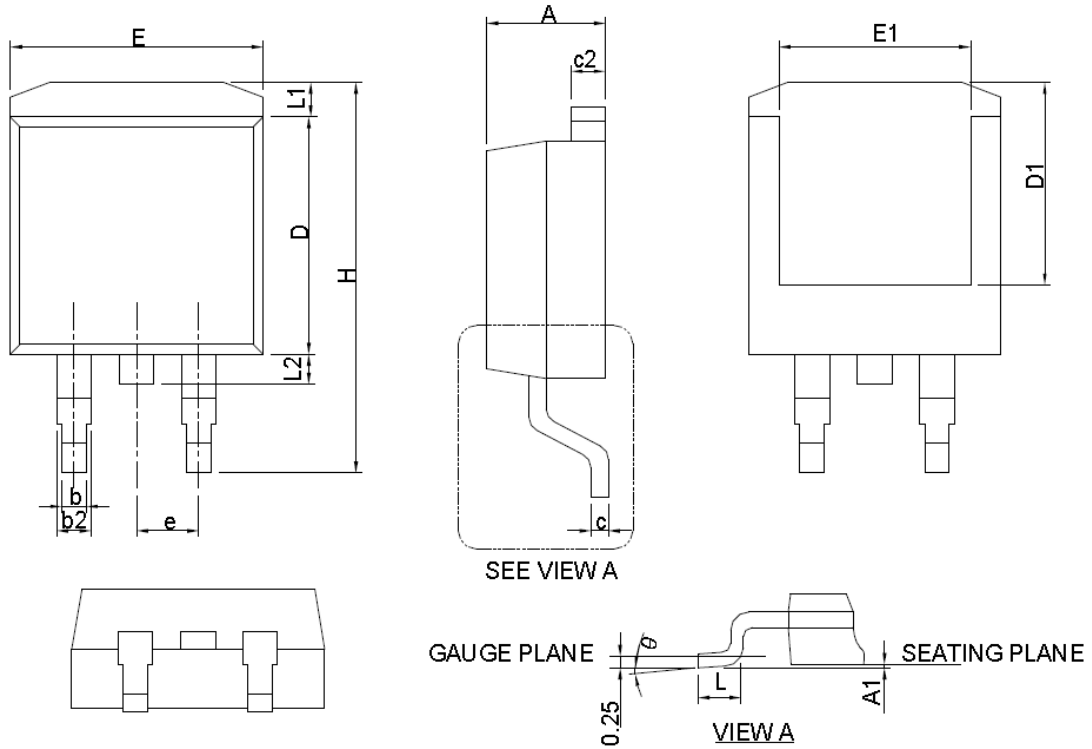
| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|--------------|--|-----|------|-----------|------------|
| OFF CHARACTERISTICS | | | | | | |
| Drain-Source Breakdown Voltage | BV_{DSS} | $V_{GS}=0V, I_D=250\mu A$ | 40 | | | V |
| Zero Gate Voltage Drain Current | I_{DSS} | $V_{DS}=32V, V_{GS}=0V$ | | | 1 | μA |
| Gate-Body Leakage Current | I_{GSS} | $V_{GS}=\pm 20V, V_{DS}=0V$ | | | ± 100 | nA |
| ON CHARACTERISTICS (Note 2) | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.4 | 1.7 | 2.5 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}=4.5V, I_D=20A$ | | 2 | 2.3 | m Ω |
| | | $V_{GS}=10V, I_D=25A$ | | 1.6 | 1.7 | m Ω |
| DYNAMIC CHARACTERISTICS (Note4) | | | | | | |
| Input Capacitance | C_{iss} | $V_{DS}=20V, V_{GS}=0V, F=1.0MHz$ | | 5200 | | PF |
| Output Capacitance | C_{oss} | | | 1500 | | PF |
| Reverse Transfer Capacitance | C_{rss} | | | 172 | | PF |
| SWITCHING CHARACTERISTICS (Note 3) | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DS}=20V, R_L=20\Omega, V_{GEN}=10V, R_G=6\Omega, I_D=1A$ | | 17 | | nS |
| Turn-on Rise Time | t_r | | | 11.5 | | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 36 | | nS |
| Turn-Off Fall Time | t_f | | | 31 | | nS |
| Total Gate Charge | Q_g | $V_{DS}=20V, I_D=25A, V_{GS}=4.5V$ | | 30 | | nC |
| Gate-Source Charge | Q_{gs} | | | 14 | | nC |
| Gate-Drain Charge | Q_{gd} | | | 10.2 | | nC |
| Body Diode Reverse Recovery Time | T_{rr} | $I_F=5A, di/dt=100A/\mu s$ | | 38 | | nS |
| Body Diode Reverse Recovery Charge | Q_{rr} | | | 68 | | nC |
| DRAIN-SOURCE DIODE CHARACTERISTICS | | | | | | |
| Diode Forward Voltage (Note 2) | V_{SD} | $V_{GS}=0V, I_S=20A$ | | 0.8 | 1.1 | V |

NOTES:

1. Pulse width limited by max. junction temperature.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
3. Guaranteed by design, not subject to production testing

Package Information

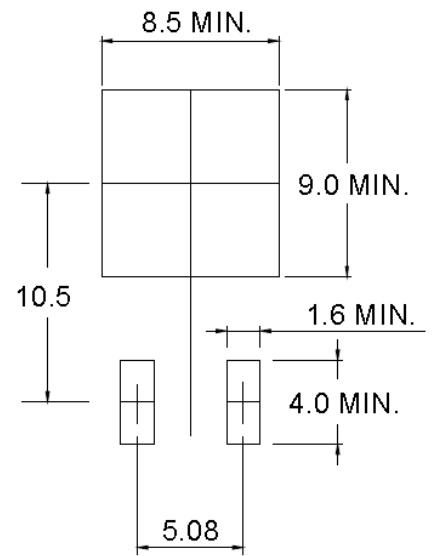
TO263-3 Package



| SYMBOL | TO-263-3 | | | |
|--------|-------------|-------|-----------|-------|
| | MILLIMETERS | | INCHES | |
| | MIN. | MAX. | MIN. | MAX. |
| A | 4.06 | 4.83 | 0.160 | 0.190 |
| A1 | 0.00 | 0.25 | 0.000 | 0.010 |
| b | 0.51 | 0.99 | 0.020 | 0.039 |
| b2 | 1.14 | 1.78 | 0.045 | 0.070 |
| c | 0.38 | 0.74 | 0.015 | 0.029 |
| c2 | 1.14 | 1.65 | 0.045 | 0.065 |
| D | 8.38 | 9.65 | 0.330 | 0.380 |
| D1 | 6.00 | 9.00 | 0.236 | 0.354 |
| E | 9.65 | 11.43 | 0.380 | 0.450 |
| E1 | 6.22 | 9.00 | 0.245 | 0.354 |
| e | 2.54 BSC | | 0.100 BSC | |
| H | 14.61 | 15.88 | 0.575 | 0.625 |
| L | 1.78 | 2.79 | 0.070 | 0.110 |
| L1 | - | 1.68 | - | 0.066 |
| L2 | - | 1.78 | - | 0.070 |
| θ | 0° | 8° | 0° | 8° |

Note : Follow JEDEC TO-263 AB.

RECOMMENDED LAND PATTERN



UNIT: mm

Design Notes