

N-Channel 30V(D-S) MOSFET

| Product summary | | |
|---------------------------------------|-----|------------|
| V_{DS} | 30 | V |
| $R_{DS(ON)}$ (at $V_{GS}=10V$) Typ. | 3.6 | m Ω |
| $R_{DS(ON)}$ (at $V_{GS}=4.5V$) Typ. | 4.7 | m Ω |
| I_D ($T_C=25^\circ C$) | 80 | A |

Features

- High density cell design for low $R_{DS(ON)}$
- Excellent package for heat dissipation
- Trench Power MV MOSFET technology

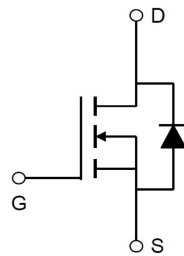
Applications

- High current load applications
- Load switching

Pin Configuration



TO-252



Packing Information

| Device | Package | Reel Size | Quantity(Min. Package) |
|------------|---------|-----------|------------------------|
| ECFA80N03A | TO-252 | 13" | 2500pcs |

Absolute Maximum Ratings (at $T_A=25^\circ C$ Unless Otherwise Noted)

| Symbol | Parameter | Rating | Units | |
|----------------|--|-------------------|------------|---|
| V_{DS} | Drain-Source Voltage | 30 | V | |
| V_{GS} | Gate-Source Voltage | ± 20 | V | |
| I_D | Continuous Drain Current at $V_{GS}=10V$ | $T_C=25^\circ C$ | 80 | A |
| | | $T_C=100^\circ C$ | 56 | A |
| I_{DM} | Pulse Drain Current Tested ^A | 190 | A | |
| E_{AS} | Single Pulse Avalanche Energy | 225 | mJ | |
| P_D | Power Dissipation | 54 | W | |
| T_J, T_{STG} | Junction and Storage Temperature Range | -55 to +175 | $^\circ C$ | |

Thermal Characteristics

| Symbol | Parameter | Typical | Units |
|-----------------|--|---------|--------------|
| $R_{\theta JC}$ | Thermal Resistance-Junction to case ^B | 2.8 | $^\circ C/W$ |

Electrical Characteristics (at $T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

| Symbol | Parameter | Condition | Min. | Typ. | Max. | Units |
|-----------------------------|---------------------------------------|--|------|------|-----------|------------|
| Static Parameters | | | | | | |
| BV_{DSS} | Drain-Source Breakdown Voltage | $V_{GS}=0V, I_D=250\mu A$ | 30 | -- | -- | V |
| I_{DSS} | Zero Gate Voltage Drain Current | $V_{DS}=30V, V_{GS}=0V$ | -- | -- | 1 | μA |
| I_{GSS} | Gate-Body Leakage Current | $V_{DS}=0V, V_{GS}=\pm 20V$ | -- | -- | ± 100 | nA |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}=V_{GS}, I_D=250\mu A$ | 1.0 | 1.5 | 2.5 | V |
| $R_{DS(on)}$ | Drain-Source On-State Resistance | $V_{GS}=10V, I_D=15A$ | -- | 3.6 | 4.5 | m Ω |
| | | $V_{GS}=4.5V, I_D=15A$ | -- | 4.7 | 6 | m Ω |
| V_{SD} | Forward Voltage | $I_S=20A, V_{GS}=0V$ | -- | -- | 1.2 | V |
| I_S | Maximum Body-Diode Continuous Current | | -- | -- | 80 | A |
| Dynamic Parameters | | | | | | |
| C_{iss} | Input Capacitance | $V_{GS}=0V, V_{DS}=15V$ $f=1\text{MHz}$ | -- | 1620 | -- | pF |
| C_{oss} | Output Capacitance | | -- | 342 | -- | pF |
| C_{rss} | Reverse Transfer Capacitance | | -- | 191 | -- | pF |
| Switching Parameters | | | | | | |
| Q_g | Total Gate Charge | $V_{DS}=15V, I_D=20A$ $V_{GS}=10V$ | -- | 56 | -- | nC |
| Q_{gs} | Gate-Source Charge | | -- | 13 | -- | nC |
| Q_{gd} | Gate-Drain Charge | | -- | 12.1 | -- | nC |
| $t_{D(on)}$ | Turn-on Delay Time | $V_{DD}=20V, I_D=2A,$ $R_L=1\Omega, R_{GEN}=3\Omega,$ $V_{GS}=10V$ | -- | 9 | -- | nS |
| t_r | Turn-on Rise Time | | -- | 21 | -- | nS |
| $t_{D(off)}$ | Turn-off Delay Time | | -- | 29 | -- | nS |
| t_f | Turn-off Fall Time | | -- | 8 | -- | nS |

A. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

B. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper

Typical Characteristics

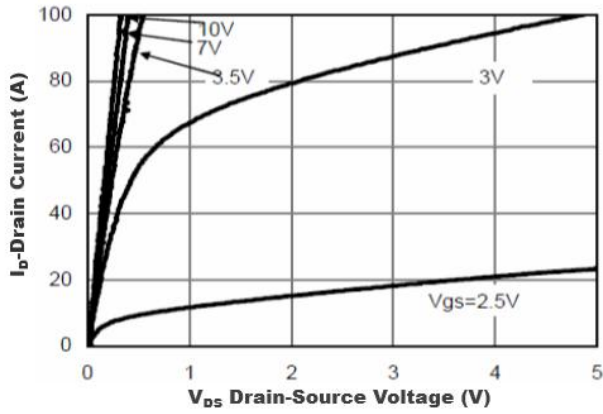


Figure1. Output Characteristics

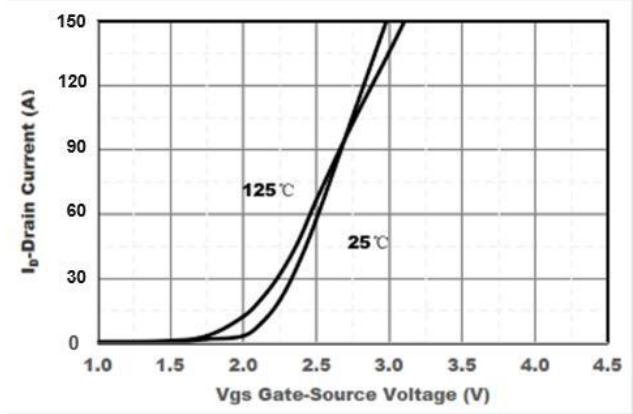


Figure2. Transfer Characteristics

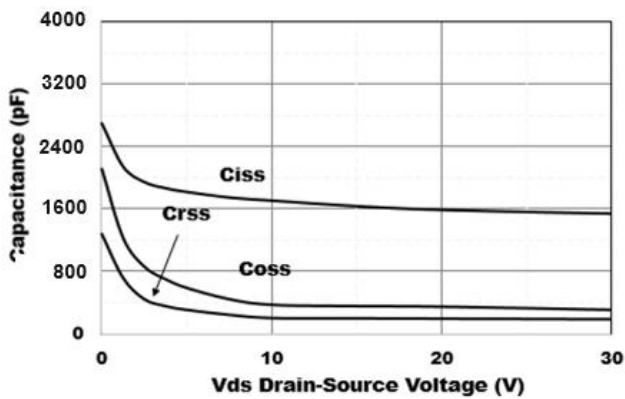


Figure3. Capacitance Characteristics

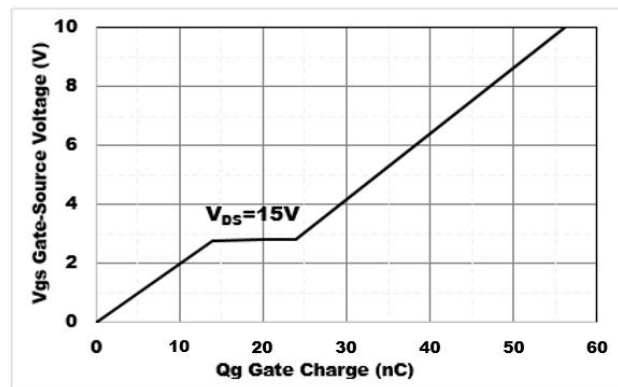


Figure4. Gate Charge

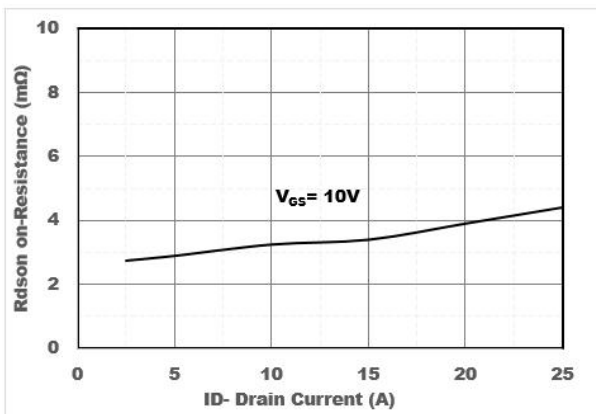


Figure5. Drain-Source on Resistance

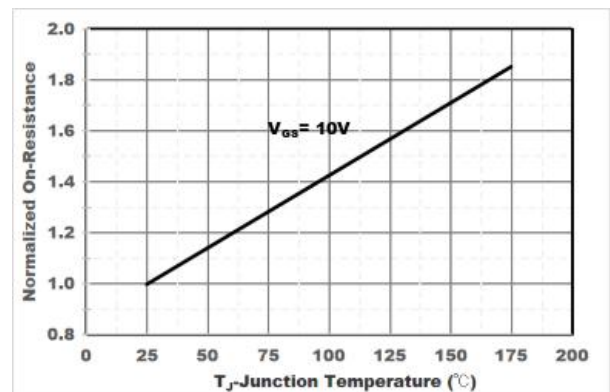


Figure6. Drain-Source on Resistance

Typical Characteristics

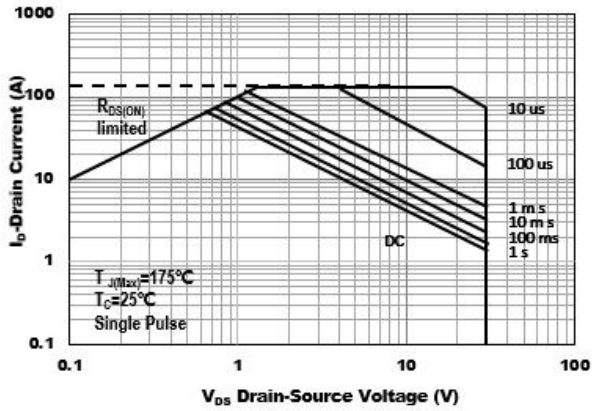


Figure7. Safe Operation Area

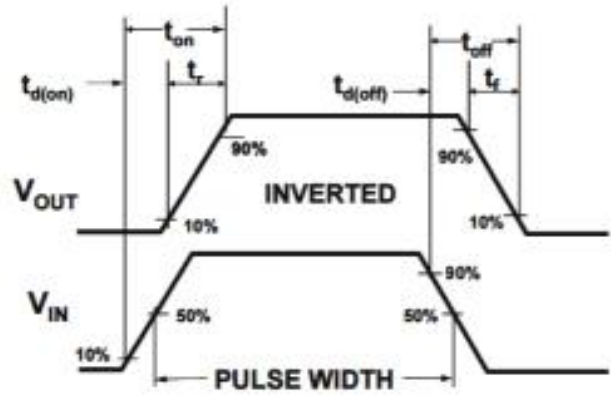
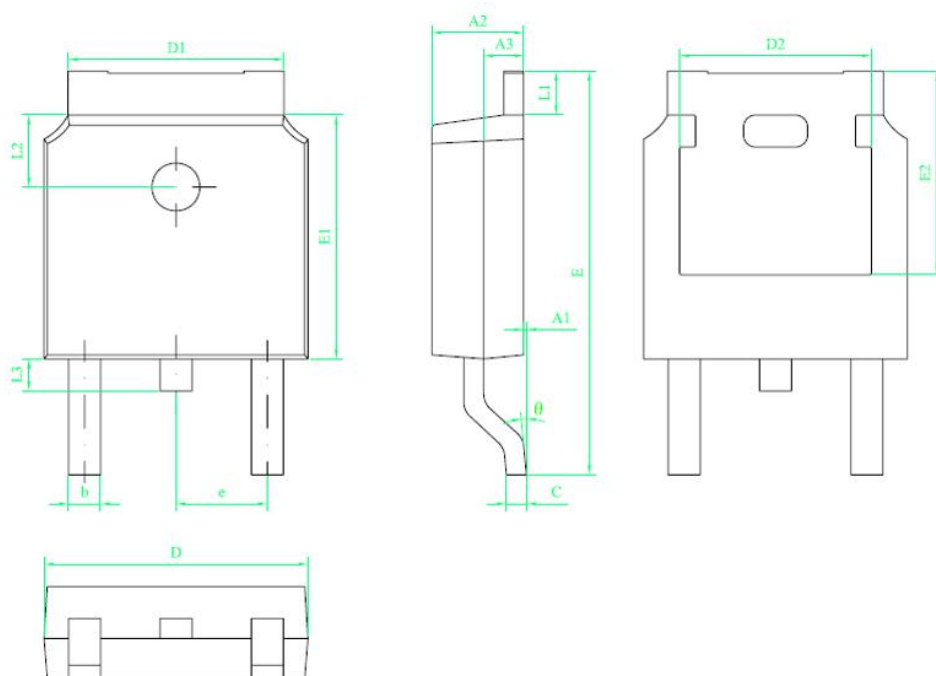


Figure8. Switching wave

TO-252 Package Information



| 符号 | 尺寸 | | |
|----------|------|-------|-------|
| | min | nom | max |
| A1 | 0 | --- | 0.10 |
| A2 | 2.20 | 2.30 | 2.40 |
| A3 | 0.90 | 1.00 | 1.10 |
| b | 0.75 | --- | 0.85 |
| c | 0.50 | --- | 0.60 |
| D | 6.50 | 6.60 | 6.70 |
| D1 | 5.30 | 5.40 | 5.50 |
| D2 | 4.70 | 4.80 | 4.90 |
| E | 9.90 | 10.10 | 10.30 |
| E1 | 6.00 | 6.10 | 6.20 |
| E2 | 5.20 | 5.30 | 5.40 |
| e | 2.20 | 2.286 | 2.40 |
| L1 | 0.90 | --- | 1.25 |
| L2 | 1.70 | 1.80 | 1.90 |
| L3 | 0.60 | 0.80 | 1.00 |
| θ | 0° | --- | 8° |

技术要求:

1. 树脂体不应有崩裂、缺损等缺陷;
2. 树脂上下部X、Y方向偏差不得超过0.20;
3. 胶体两端留胶总宽和宽度不超过0.50;
4. 所有单位为mm;