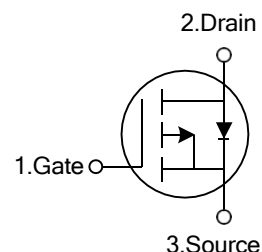


# PRODUCT CHARACTERISTICS

|                                 |               |
|---------------------------------|---------------|
| $V_{DS}$                        | -60V          |
| $R_{DS(on)typ}(@V_{GS}=-10V)$   | 22 m $\Omega$ |
| $R_{DS(on)typ}(@V_{GS}=-4.5 V)$ | 27 m $\Omega$ |
| $I_D$                           | -80A          |

# Symbol

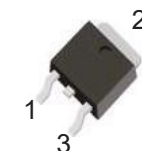


# APPLICATIONS

- \* Motor driver appliances
- \* Adapter appliances
- \* High power inverter system

# FEATURES

- \* Surface-mounted package
- \* Low gate charge



TO-252

# ORDER INFORMATION

| Order codes  |           | Package | Packing           |
|--------------|-----------|---------|-------------------|
| Halogen-Free | Halogen   |         |                   |
| N/A          | MOT80P06D | TO-252  | 2500 pieces /Reel |

# ABSOLUTE MAXIMUM RATINGS( $T_A=25^{\circ}C$ , unless otherwise specified)

| Parameter                                      |                    | Symbol    | Value    | Unit        |
|------------------------------------------------|--------------------|-----------|----------|-------------|
| Drain-Source Voltage                           |                    | $V_{DS}$  | -60      | V           |
| Gate-Source Voltage                            |                    | $V_{GS}$  | $\pm 20$ | V           |
| Drain Current Continuous<br>( $@V_{GS}=-10V$ ) | $T_A=25^{\circ}C$  | $I_D$     | -80      | A           |
|                                                | $T_A=100^{\circ}C$ | $I_D$     | -42      | A           |
| Drain Current ( Pulsed )                       |                    | $I_{DM}$  | -320     | A           |
| Drain power dissipation                        |                    | $P_D$     | 250      | W           |
| Diode Forward Current                          |                    | $I_S$     | -80      | A           |
| Single Pulsed Avalanche Energy                 |                    | EAS       | 81       | mJ          |
| Storage Temperature                            |                    | $T_{STG}$ | -55~+150 | $^{\circ}C$ |
| Junction Temperature                           |                    | $T_J$     | 150      | $^{\circ}C$ |

# THERMAL CHARACTERISTICS

| Parameter           | Symbol          | Typ | Unit          |
|---------------------|-----------------|-----|---------------|
| Junction to Case    | $R_{thJC}$      | 0.5 | $^{\circ}C/W$ |
| Junction to Ambient | $R_{\theta JA}$ | 50  | $^{\circ}C/W$ |

Note: \* EAS condition:  $T_J=25^{\circ}C$ ,  $V_{DD}=20V$ ,  $V_G=10V$ ,  $L=0.5mH$ ,  $R_g=25\Omega$

■ ELECTRICAL CHARACTERISTICS (T<sub>C</sub> = 25°C, unless otherwise specified)

| Parameter                      | Symbol              | Conditions                                                                                      | Min. | Typ.  | Max. | Unit |
|--------------------------------|---------------------|-------------------------------------------------------------------------------------------------|------|-------|------|------|
| Static Characteristics         |                     |                                                                                                 |      |       |      |      |
| Drain-Source Breakdown Voltage | V <sub>DSS</sub>    | V <sub>GS</sub> =0V, I <sub>DS</sub> =-250μA                                                    | -60  | -     | -    | V    |
| Gate Threshold Voltage         | V <sub>GS(th)</sub> | V <sub>DS</sub> = V <sub>GS</sub> , I <sub>DS</sub> =-250μA                                     | -1   | -1.8  | -3   | V    |
| Drain Leakage Current          | I <sub>DSS</sub>    | V <sub>DS</sub> =- 60 V , V <sub>GS</sub> =0V                                                   | -    | -     | -1   | μA   |
| Gate Leakage Current           | I <sub>GSS</sub>    | V <sub>GS</sub> =0V, V <sub>GS</sub> =±20V                                                      | -    | -     | ±100 | nA   |
| On-State Resistance            | R <sub>DS(ON)</sub> | V <sub>GS</sub> =-10V, I <sub>DS</sub> =-20A                                                    | -    | 22    | 26   | mΩ   |
|                                |                     | V <sub>GS</sub> = - 4.5 V, I <sub>DS</sub> = -20A                                               | -    | 27    | 32   | mΩ   |
| Diode Characteristics          |                     |                                                                                                 |      |       |      |      |
| Continuous Source Current      | I <sub>S</sub>      |                                                                                                 | -    | -     | -80  | A    |
| Maximum Pulsed Current         | I <sub>SM</sub>     |                                                                                                 | -    | -     | -320 | A    |
| Diode Forward Voltage          | V <sub>SD</sub>     | I <sub>SD</sub> =-1A, V <sub>GS</sub> =0V                                                       | -    | -0.72 | -1.3 | V    |
| Reverse Recovery Time          | t <sub>rr</sub>     | I <sub>SD</sub> =-15A, dI <sub>D</sub> /dt =100A/μs                                             | -    | 23    | -    | nS   |
| Reverse Recovery Charge        | Q <sub>rr</sub>     |                                                                                                 | -    | 23    | -    | nC   |
| Dynamic Characteristics        |                     |                                                                                                 |      |       |      |      |
| Gate Resistance                | R <sub>g</sub>      | V <sub>GS</sub> =0V,V <sub>DS</sub> =0V ,f=1.0MHz                                               | -    | 7.9   | -    | Ω    |
| Forward Transconductance       | g <sub>fs</sub>     | V <sub>DS</sub> =-10V, I <sub>D</sub> = -3A                                                     | 10   | -     | -    | S    |
| Input Capacitance              | C <sub>iss</sub>    | V <sub>GS</sub> = 0 V, V <sub>DS</sub> =-20V<br>Frequency = 1MHz                                | -    | 3600  | -    | pF   |
| Output Capacitance             | C <sub>oss</sub>    |                                                                                                 | -    | 171   | -    | pF   |
| Reverse Transfer Capacitance   | C <sub>rss</sub>    |                                                                                                 | -    | 162   | -    | pF   |
| Turn-on Delay Time             | t <sub>d(on)</sub>  | V <sub>DS</sub> =-30V, V <sub>GS</sub> =-10V,<br>R <sub>G</sub> =3.9Ω,<br>I <sub>DS</sub> =-15A | -    | 66    | -    | nS   |
| Turn-on Rise Time              | t <sub>r</sub>      |                                                                                                 | -    | 101   | -    | nS   |
| Turn-off Delay Time            | t <sub>d(off)</sub> |                                                                                                 | -    | 465   | -    | nS   |
| Turn-off Fall Time             | t <sub>f</sub>      |                                                                                                 | -    | 205   | -    | nS   |
| Gate Charge Characteristics    |                     |                                                                                                 |      |       |      |      |
| Total Gate Charge              | Q <sub>g</sub>      | V <sub>DS</sub> =-30V, V <sub>GS</sub> =-10V,<br>I <sub>DS</sub> = -15A                         | -    | 72    | -    | nC   |
| Gate-Source Charge             | Q <sub>gs</sub>     |                                                                                                 | -    | 19    | -    | nC   |
| Gate-Drain Charge              | Q <sub>gd</sub>     |                                                                                                 | -    | 9.8   | -    | nC   |

## ■ TYPICAL CHARACTERISTICS

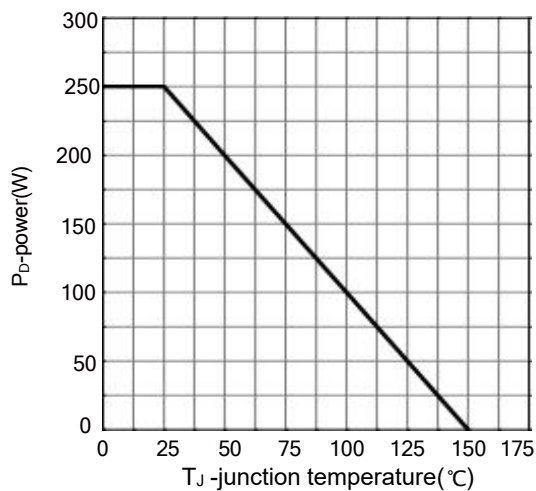


Figure 1 Power capability

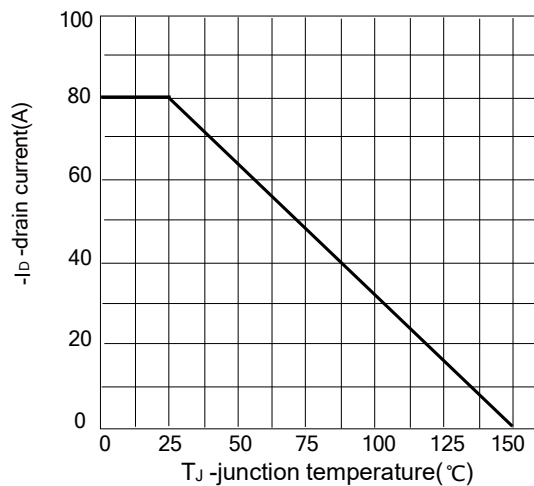


Figure 2 Current capability

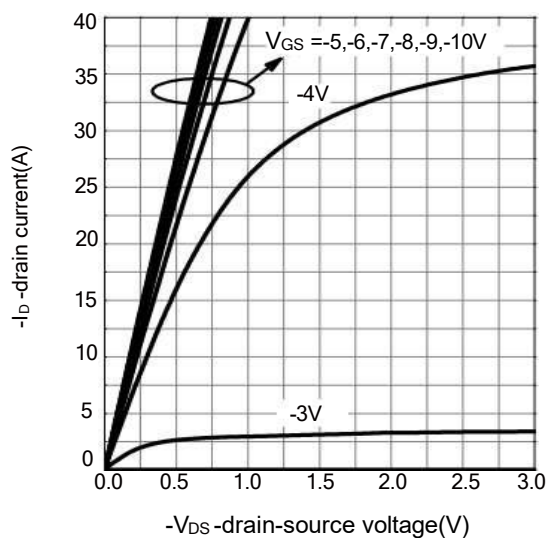


Figure 3 Output characteristics

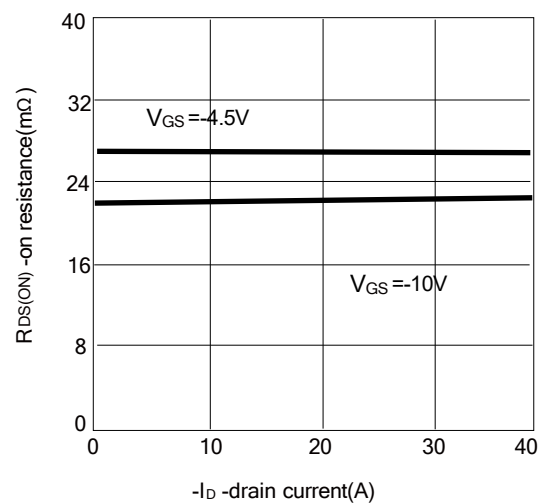


Figure 4 Drain source on resistance

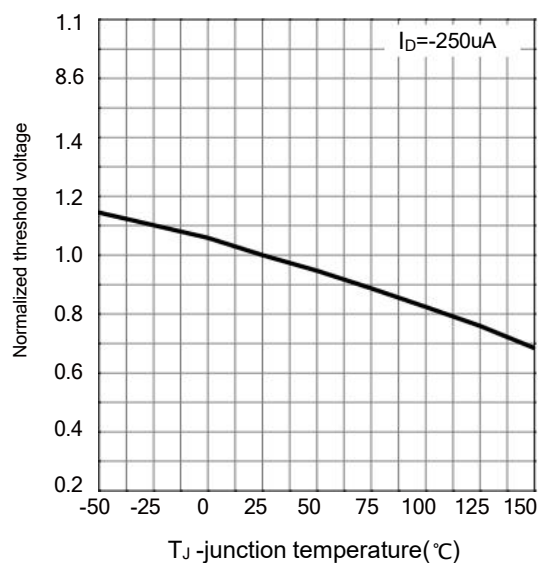


Figure 5 Normalized threshold voltage

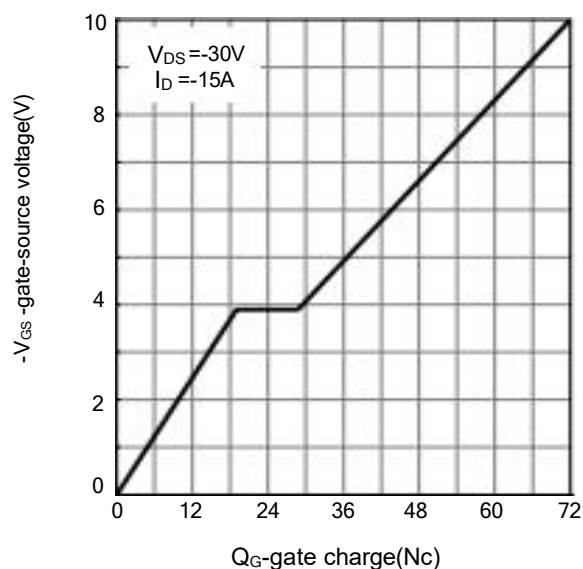


Figure 6 Gate charge

■ TYPICAL CHARACTERISTICS

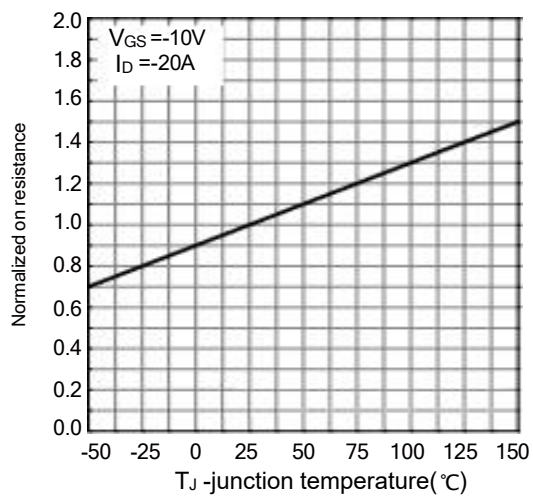


Figure 7 Normalized on resistance

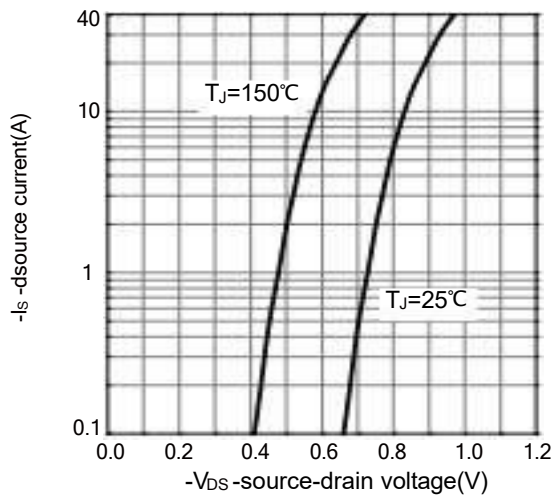


Figure 8 Diode forward current

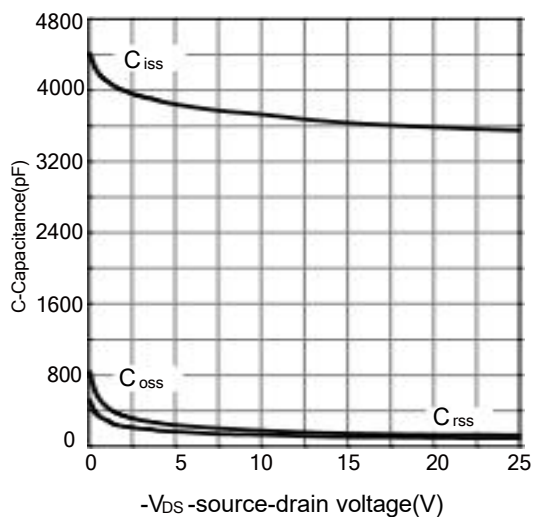


Figure 9 Capacitance

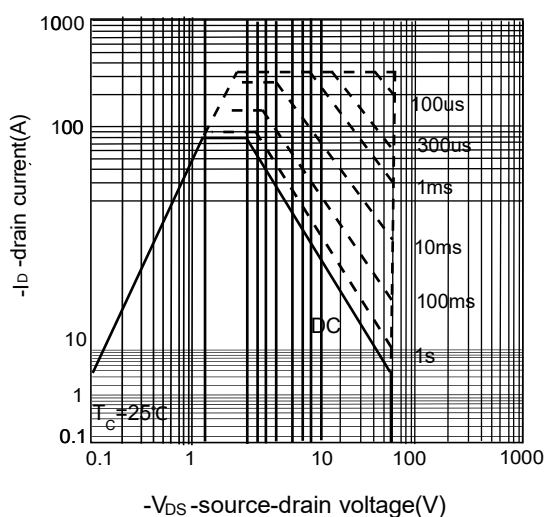


Figure 10 Safe operation area

■ TO-252 PACKAGE OUTLINE DIMENSIONS

