

MS 10N65

N-Channel Enhancement Mode Power MOSFET

Description

The MS10N65 is a N-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness. The TO-220AB package is universally preferred for all commercial-industrial applications

Features

- BVDSS=700V typically @ Tj=150°C
- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

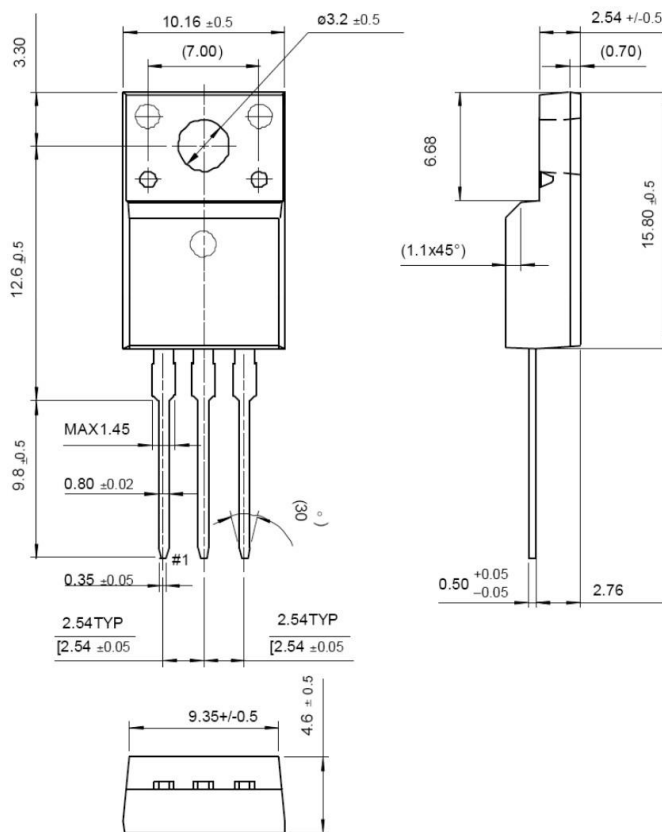
Application

- Power Factor Correction
- LCD TV Power
- Full and Half Bridge Power

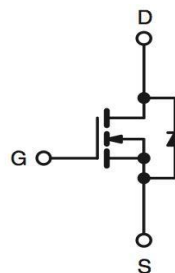
Package type : TO-220AB

Packing & Order Information

50/Tube ; 1,000/Box



Graphic symbol



**RoHS
COMPLIANT**

MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings (Tc=25°C unless otherwise specified)

| Symbol | Parameter | Value | Unit |
|-----------------|--------------------------------------|-------|------|
| V _{DS} | Drain-Source Voltage | 650 | V |
| V _{GS} | Gate-Source Voltage | ±30 | V |
| I _D | Drain Current -Continuous (TC=25°C) | 9.5 | A |
| | Drain Current -Continuous (TC=100°C) | 6.0 | A |
| I _{DM} | Pulsed Drain Current | 38 | A |
| E _{AS} | Single Pulsed Avalanche Energy | 700 | mJ |
| E _{AR} | Repetitive Avalanche Energy | 15.6 | mJ |
| dV/dt | Peak Diode Recovery dV/dt | 5.5 | V/ns |

- Drain current limited by maximum junction temperature

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Absolute Maximum Ratings (Tc=25°C unless otherwise specified)

| Symbol | Parameter | Value | Unit |
|----------------------------------|--|-------------|------|
| P _D | Power Dissipation (TC=25°C) | 50 | W |
| | Power Dissipation (TC=100°C) | 0.4 | W |
| T _J /T _{STG} | Operating Junction and Storage Temperature | -55 to +150 | °C |

NOTE:

1. Repetitive rating; pulse width limited by maximum junction temperature.

Thermal characteristics (Tc=25°C unless otherwise noted)

| Symbol | Parameter | Typ. | Max. | Units |
|------------------|----------------------------|------|------|-------|
| R _{θJC} | Typical thermal resistance | -- | 0.8 | °C/W |
| R _{θJA} | | -- | 62.5 | |

Static Characteristics

| Symbol | Test Conditions | Min | Typ. | Max. | Units |
|--------------------------------------|--|-----|------|-----------|-------|
| V _{GS} | V _{DS} = V _{GS} , I _D = 250μA | 2.0 | | 4.0 | V |
| *R _{DS(ON)} | V _{GS} = 10 V, I _D = 4.75 A | -- | 0.7 | 0.85 | Ω |
| BV _{DSS} | V _{GS} = 0 V, I _D = 250μA | 650 | 710 | -- | V |
| ΔBV _{DSS} / ΔT _J | I _D = 250μA, Referenced to 25°C | | 0.6 | | |
| I _{DSS} | V _{DS} = 650 V, V _{GS} = 0 V V _{DS} = 520 V, V _{GS} = 0 V, T _J = 125°C | -- | -- | 10 100 | uA |
| G _{FS} | V _{DS} = 30 V, V _{GS} = 0 V | | | 100 | S |
| I _{GSS} | V _{DS} = -30 V, V _{GS} = 0 V | -- | -- | -100 | nA |

Switching Characteristics

| Symbol | Test Conditions | Min | Typ. | Max. | Units |
|---------------------|---|-----|------|------|-------|
| Q _g | V _{DS} = 520 V, I _D = 10 A, V _{GS} = 10 V | -- | 30 | 40 | nC |
| Q _{gs} | | -- | 5 | -- | |
| Q _{gd} | | -- | 14 | -- | |
| t _{d(on)} | V _{DS} = 325 V, I _D = 10 A, R _G = 25 Ω | -- | 20 | 40 | ns |
| t _r | | -- | 30 | 60 | ns |
| t _{d(off)} | | -- | 90 | 180 | ns |
| t _f | | -- | 40 | 80 | ns |
| C _{ISS} | V _{DS} = 25 V, V _{GS} = 0 V, f = 1.0MHz | -- | 1210 | 1580 | pF |
| C _{OSS} | | -- | 145 | 190 | pF |
| C _{RSS} | | -- | 16 | 20 | pF |

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| Source-Drain Diode Characteristics | | | | | |
|------------------------------------|---|-----|------|------|---------------|
| Symbol | Test Conditions | Min | Typ. | Max. | Units |
| I_S | | -- | -- | 9.5 | A |
| I_{SM} | | -- | -- | 38 | |
| V_{SD} | $I_F = 10\text{ A}, V_{GS} = 0\text{ V}$ | -- | -- | 1.5 | V |
| t_{rr} | $I_F = 10\text{ A}, V_{GS} = 0\text{ V}, dI_F/dt=100\text{A}/\mu\text{s}$ | -- | 450 | -- | ns |
| Q_{rr} | | -- | 4.2 | -- | μC |

Notes :

1. Repeativity rating : pulse width limited by junction temperature
2. $I_{AS}=10\text{A}$, $V_{DD}=50\text{V}$, $R_G=25\Omega$, Starting $T_J = 25^\circ\text{C}$
3. $I_{SD}\leq 10\text{A}$, $di/dt\leq 300\text{A}/\mu\text{s}$, $V_{DD}\leq BVDSS$, Starting $T_J = 25^\circ\text{C}$
4. Pulse Test : Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$
5. Essentially independent of operating temperature.

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Characteristics Curve

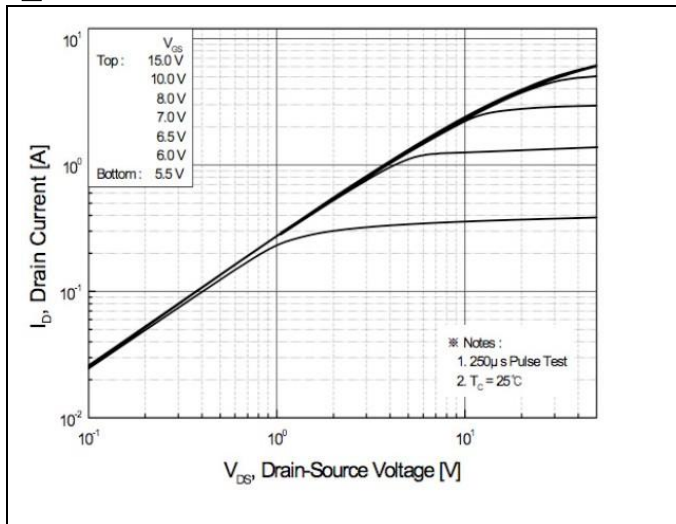


FIG.1-ON REGION CHARACTERISTICS

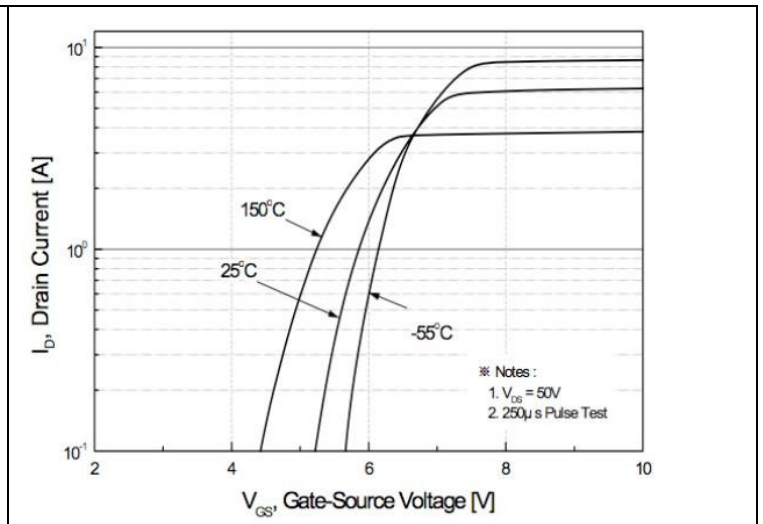


FIG.2-TRANSFER CHARACTERISTICS

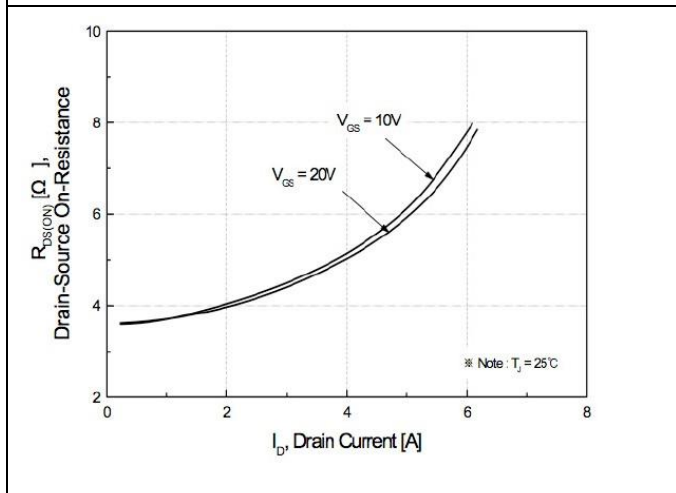


FIG.3-ON RESISTANCE VARIATION VS DRAIN CURRENT AND GATE VOLTAGE

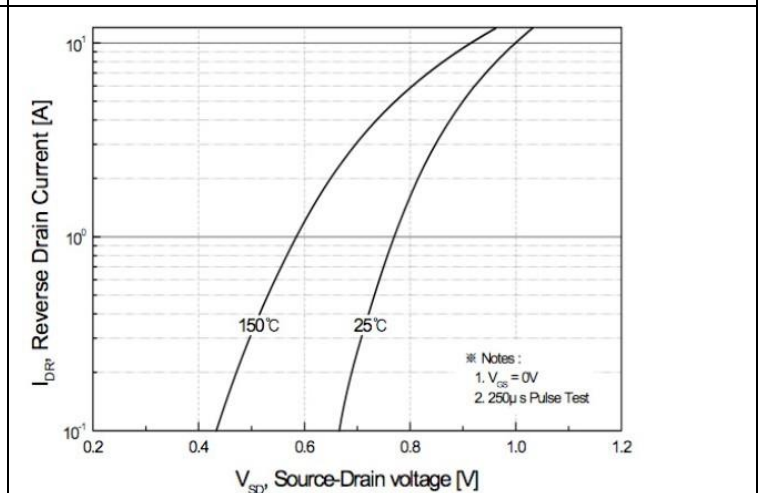


FIG.4-BODY DIODE FORWARD VOLTAGE VARIATION WITH SOURCE CURRENT AND TEMPERATURE

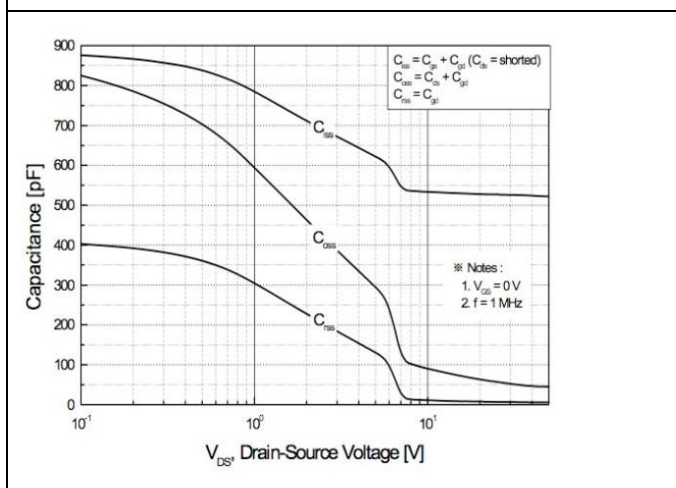


FIG.5-CAPACITANCE CHARACTERISTICS

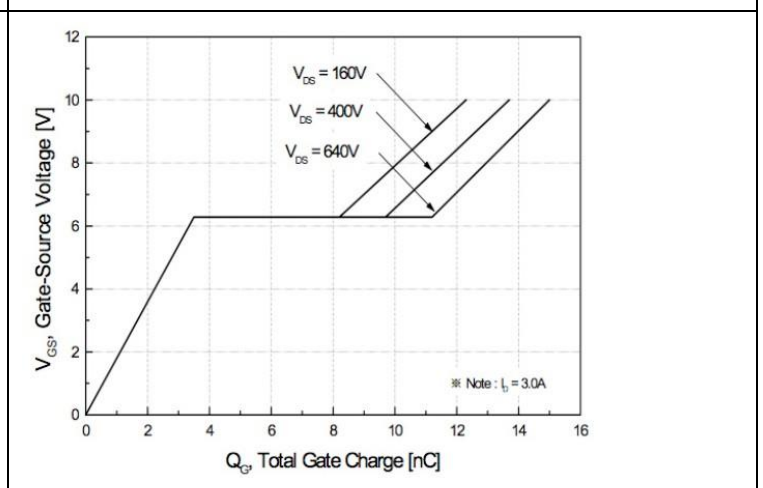


FIG.6-GATE CHARGE CHARACTERISTICS

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Characteristics Curve

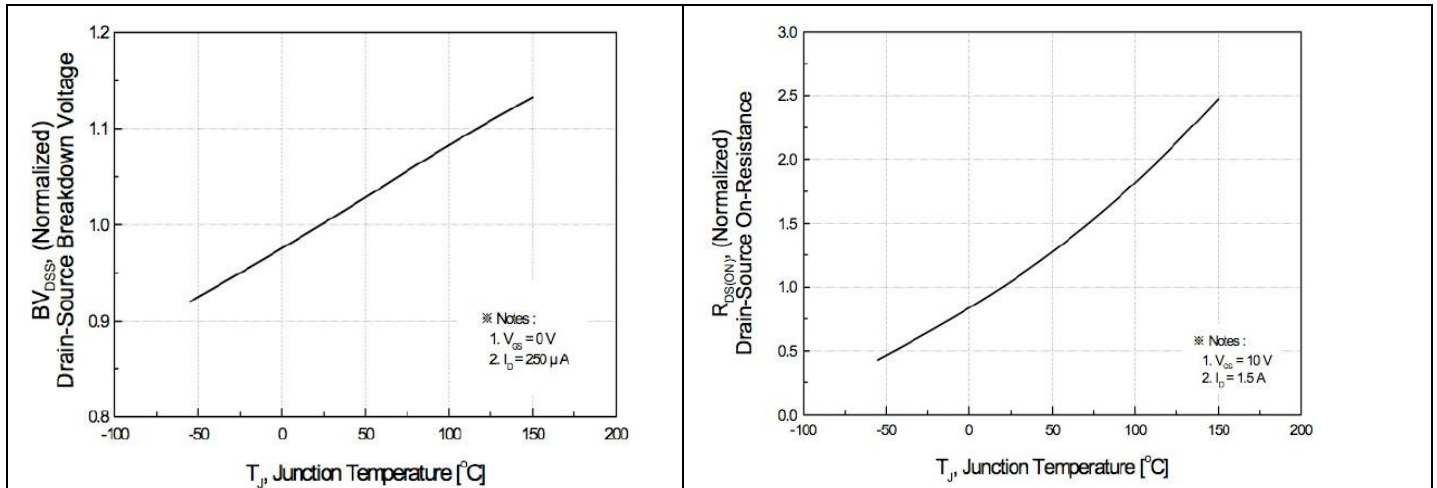


FIG. 7-BREAKDOWN VOLTAGE VARIATION VS TEMPERATURE

FIG. 8-ON-RESISTANCE VARIATION VS TEMPERATURE

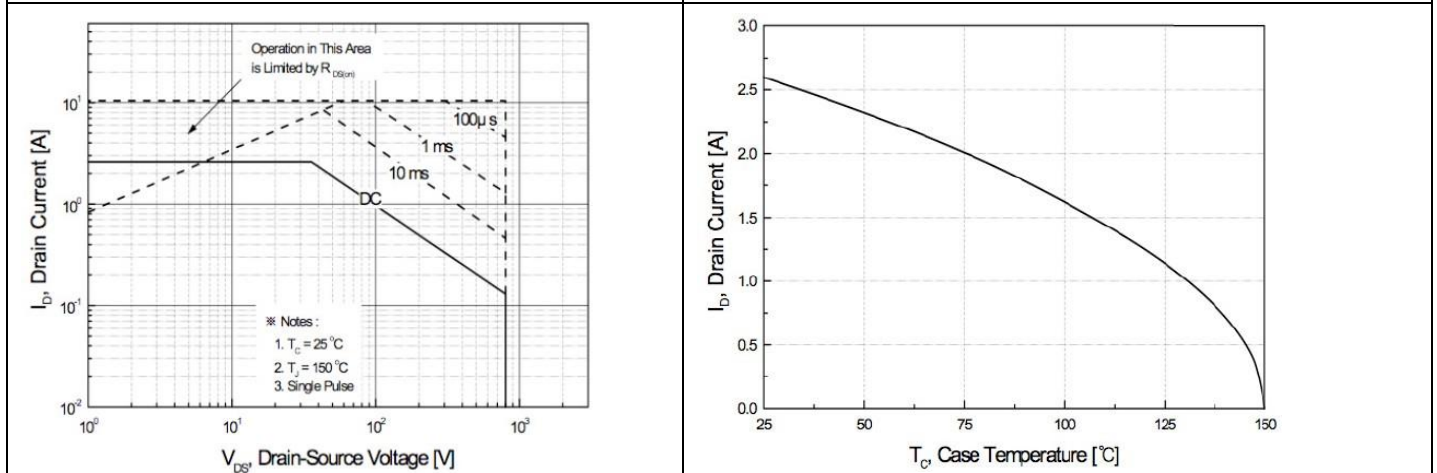


FIG. 9-MAXIMUM SAFE OPERATING AREA

FIG. 10-MAXIMUM DRAIN CURRENT VS CASE TEMPERATURE

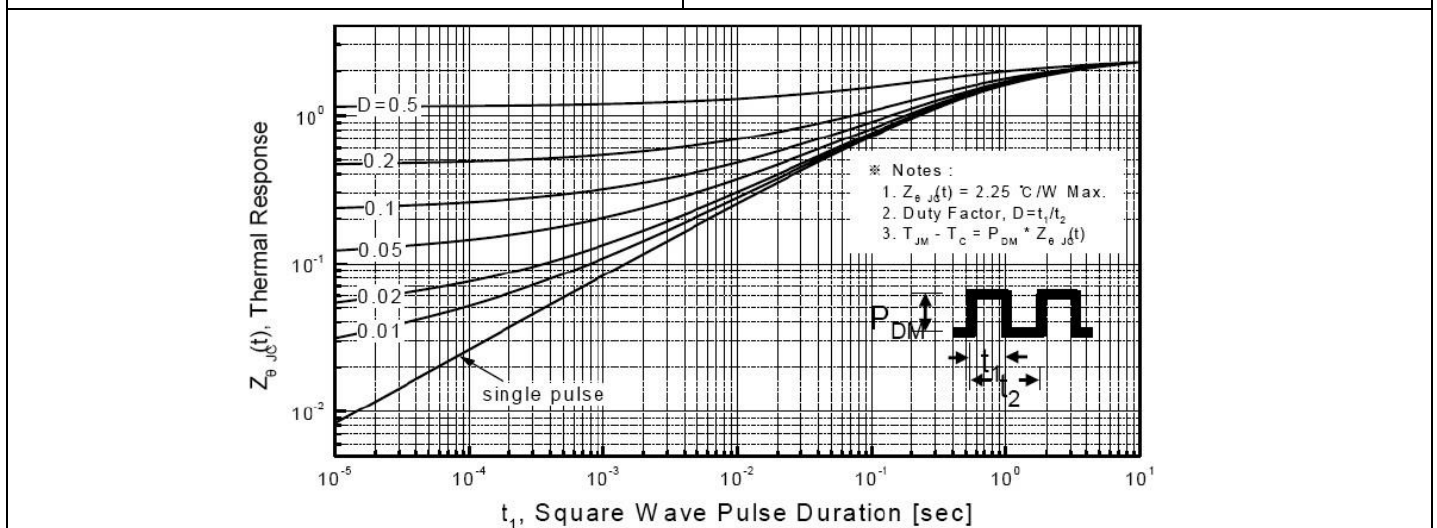


FIG. 11-TRANSIENT THERMAL RESPONSE CURVE

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