

MITSUBISHI Nch POWER MOSFET

FK14SM-9

HIGH-SPEED SWITCHING USE

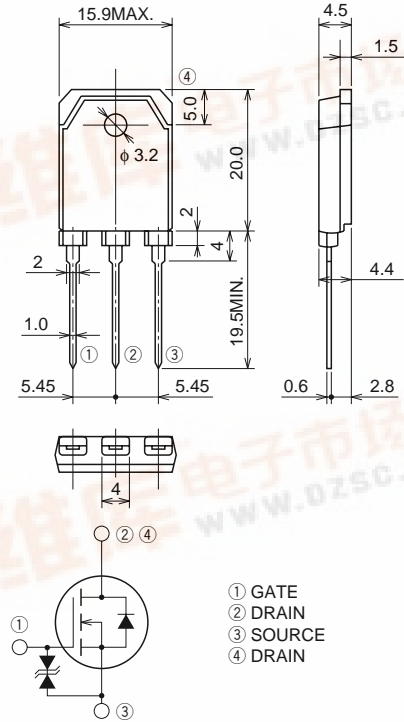
FK14SM-9



- V_{DSS} 450V
- r_{DS (ON)} (MAX) 0.65Ω
- I_D 14A
- Integrated Fast Recovery Diode (MAX.) 150ns

OUTLINE DRAWING

Dimensions in mm



APPLICATION

Servo motor drive, Robot, UPS, Inverter Fluorecent lamp, etc.

MAXIMUM RATINGS (T_c = 25°C)

| Symbol | Parameter | Conditions | Ratings | Unit |
|------------------|---------------------------|----------------------|------------|------|
| V _{DSS} | Drain-source voltage | V _{GS} = 0V | 450 | V |
| V _{GSS} | Gate-source voltage | V _{DS} = 0V | ±30 | V |
| I _D | Drain current | | 14 | A |
| I _{DM} | Drain current (Pulsed) | | 42 | A |
| I _S | Source current | | 14 | A |
| I _{SM} | Source current (Pulsed) | | 42 | A |
| P _D | Maximum power dissipation | | 150 | W |
| T _{ch} | Channel temperature | | -55 ~ +150 | °C |
| T _{stg} | Storage temperature | | -55 ~ +150 | °C |
| — | Weight | Typical value | 4.8 | g |

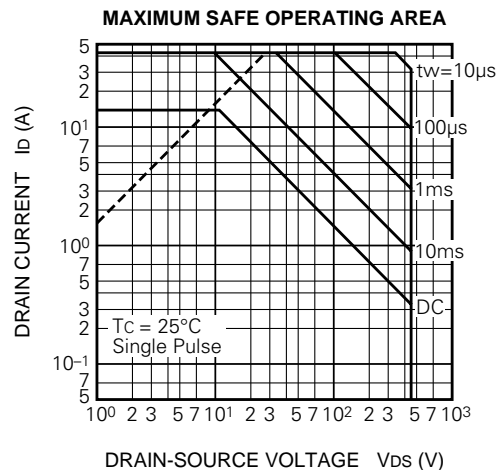
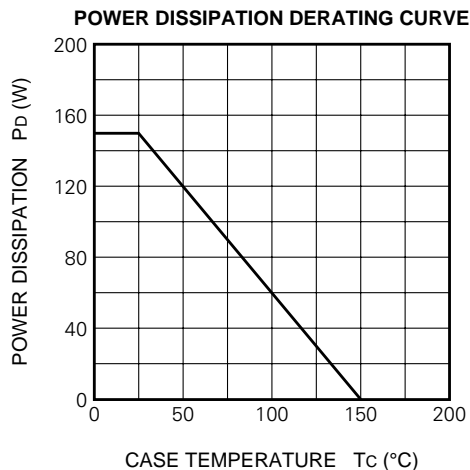
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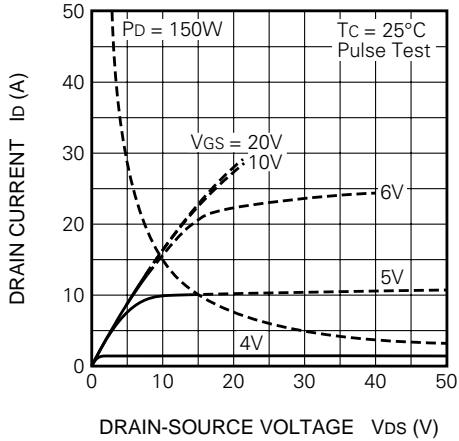
ELECTRICAL CHARACTERISTICS (Tch = 25°C)

| Symbol | Parameter | Test conditions | Limits | | | Unit |
|-----------|----------------------------------|--|--------|------|------|------|
| | | | Min. | Typ. | Max. | |
| V(BR)DSS | Drain-source breakdown voltage | ID = 1mA, VGS = 0V | 450 | — | — | V |
| V(BR)GSS | Gate-source breakdown voltage | IG = ±100μA, VDS = 0V | ±30 | — | — | V |
| IGSS | Gate-source leakage current | VGS = ±25V, VDS = 0V | — | — | ±10 | μA |
| IDSS | Drain-source leakage current | VDS = 450V, VGS = 0V | — | — | 1 | mA |
| VGS(th) | Gate-source threshold voltage | ID = 1mA, VDS = 10V | 2 | 3 | 4 | V |
| rDS(ON) | Drain-source on-state resistance | ID = 7A, VGS = 10V | — | 0.50 | 0.65 | Ω |
| VDS(ON) | Drain-source on-state voltage | ID = 7A, VGS = 10V | — | 3.50 | 4.55 | V |
| yfs | Forward transfer admittance | ID = 7A, VDS = 10V | 4.5 | 7.0 | — | S |
| Ciss | Input capacitance | VDS = 25V, VGS = 0V, f = 1MHz | — | 1500 | — | pF |
| Coss | Output capacitance | | — | 180 | — | pF |
| Crss | Reverse transfer capacitance | | — | 30 | — | pF |
| td(on) | Turn-on delay time | VDD = 200V, ID = 7A, VGS = 10V, RGEN = RGS = 50Ω | — | 30 | — | ns |
| tr | Rise time | | — | 50 | — | ns |
| td(off) | Turn-off delay time | | — | 130 | — | ns |
| tf | Fall time | | — | 50 | — | ns |
| VSD | Source-drain voltage | IS = 7A, VGS = 0V | — | 1.5 | 2.0 | V |
| Rth(ch-c) | Thermal resistance | Channel to case | — | — | 0.83 | °C/W |
| trr | Reverse recovery time | IS = 14A, dis/dt = -100A/μs | — | — | 150 | ns |

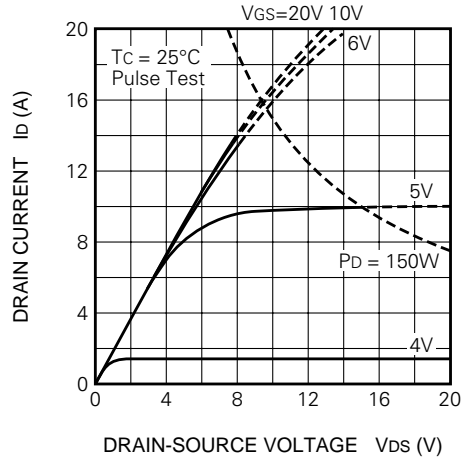
PERFORMANCE CURVES



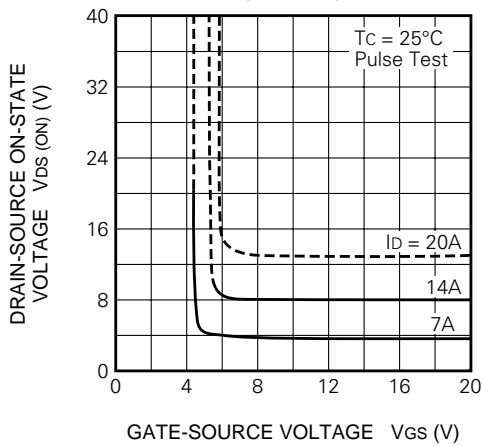
OUTPUT CHARACTERISTICS (TYPICAL)



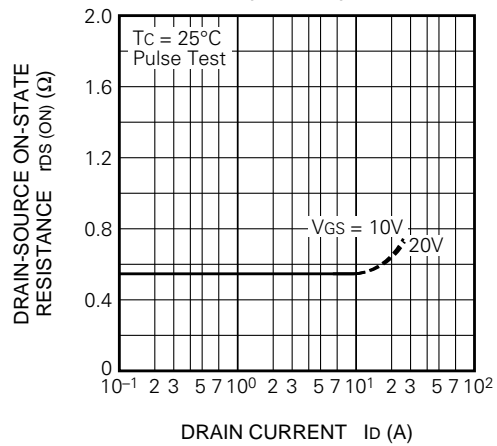
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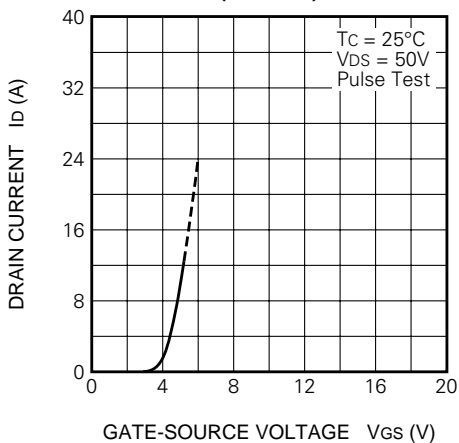
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



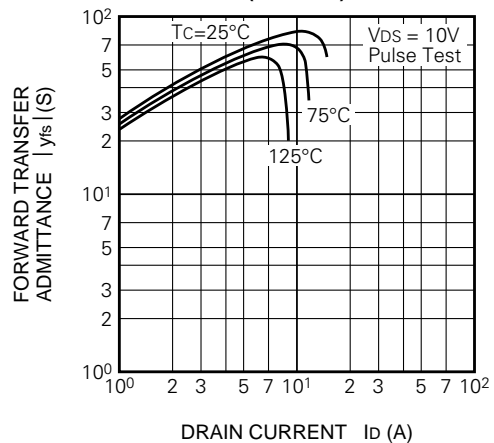
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



TRANSFER CHARACTERISTICS (TYPICAL)

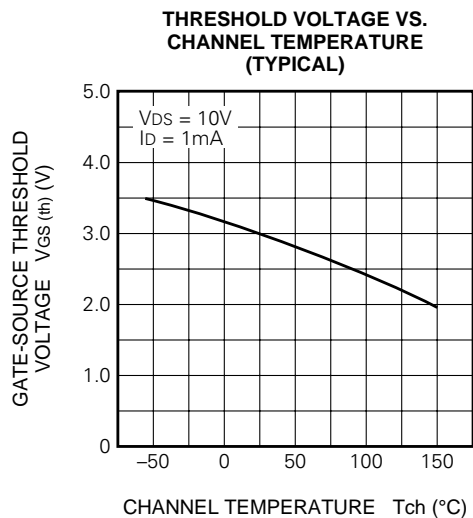
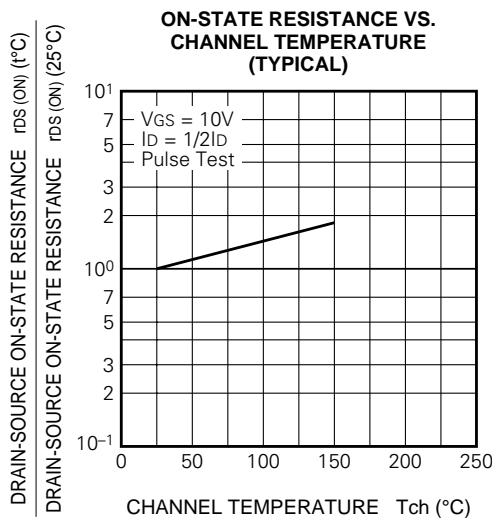
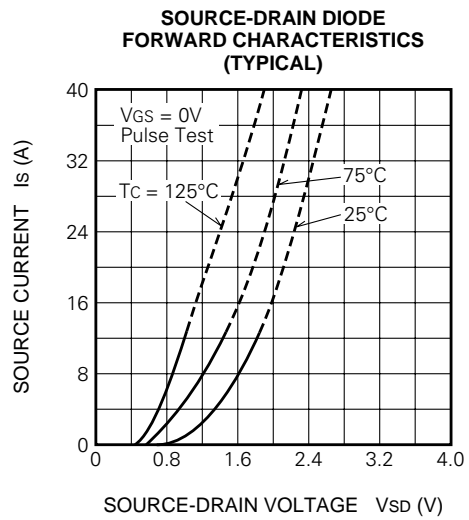
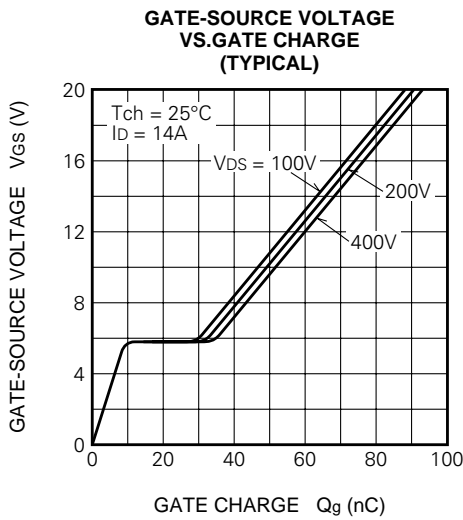
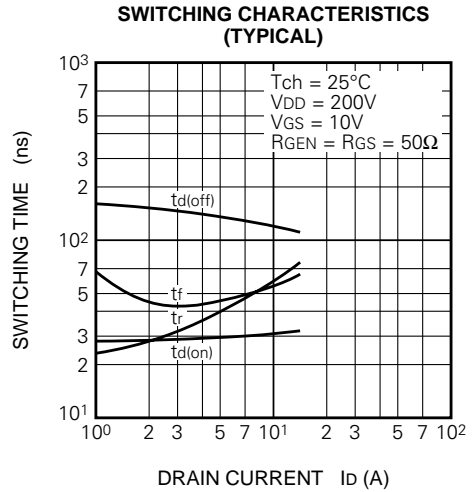
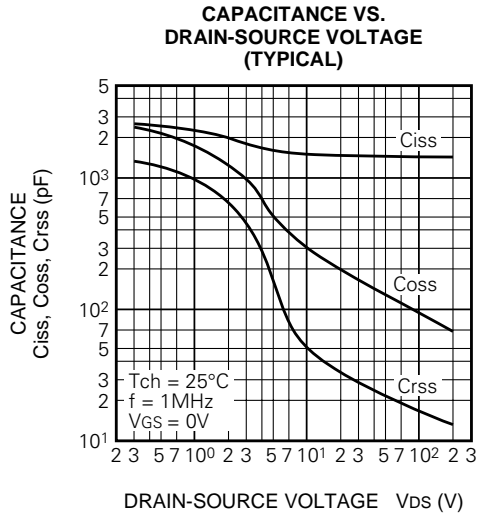


FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



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