
2SK3158

Silicon N Channel MOS FET
High Speed Power Switching

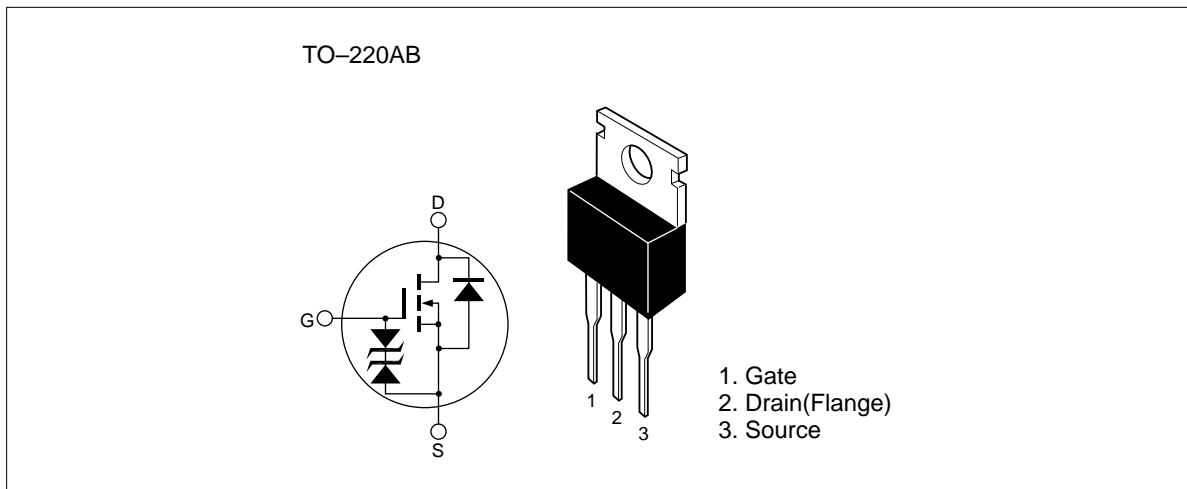
HITACHI

ADE-208-757A(Z)
Target Specification, 2nd. Edition
Dec. 1, 1998

Features

- Low on-resistance
 $R_{DS} = 35m\Omega$ typ.
- High speed switching
- 4V gate drive device can be driven from 5V source

Outline



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Absolute Maximum Ratings (Ta = 25°C)

| Item | Symbol | Ratings | Unit |
|----------------------------------------|---------------------------------|-------------|------|
| Drain to source voltage | V_{DSS} | 150 | V |
| Gate to source voltage | V_{GSS} | ±20 | V |
| Drain current | I_D | 30 | A |
| Drain peak current | $I_{D(pulse)}$ ^{Note1} | 120 | A |
| Body-drain diode reverse drain current | I_{DR} | 30 | A |
| Avalanche current | I_{AP} ^{Note3} | 30 | A |
| Avalanche energy | E_{AR} ^{Note3} | 67 | mJ |
| Channel dissipation | P_{ch} ^{Note2} | 100 | W |
| Channel temperature | T_{ch} | 150 | °C |
| Storage temperature | T_{stg} | -55 to +150 | °C |

Note: 1. $PW \leq 10\mu s$, duty cycle $\leq 1\%$
2. Value at $T_c = 25^\circ C$
3. Value at $T_{ch} = 25^\circ C$, $R_g \geq 50\Omega$

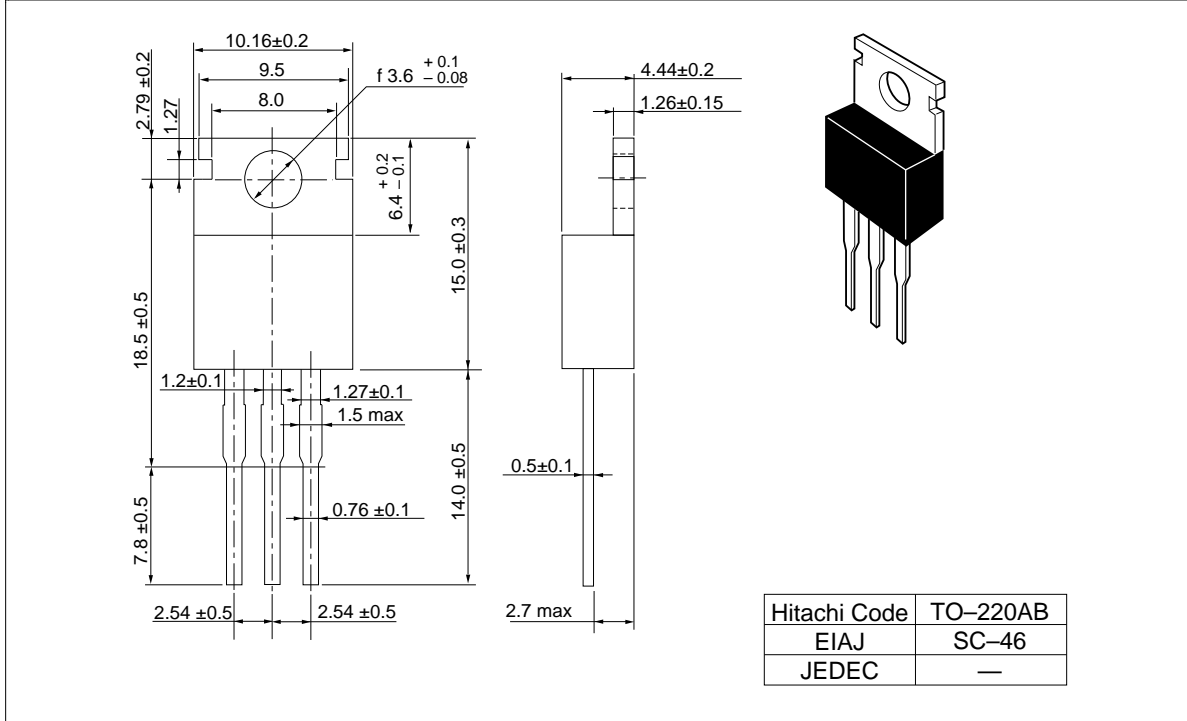
Electrical Characteristics (Ta = 25°C)

| Item | Symbol | Min | Typ | Max | Unit | Test Conditions |
|--------------------------------------------|---------------|----------|------|----------|------------------|---------------------------------------------------------------------|
| Drain to source breakdown voltage | $V_{(BR)DSS}$ | 150 | — | — | V | $I_D = 10\text{mA}, V_{GS} = 0$ |
| Gate to source breakdown voltage | $V_{(BR)GSS}$ | ± 20 | — | — | V | $I_G = \pm 100\mu\text{A}, V_{DS} = 0$ |
| Gate to source leak current | I_{GSS} | — | — | ± 10 | μA | $V_{GS} = \pm 16\text{V}, V_{DS} = 0$ |
| Zero gate voltage drain current | I_{DSS} | — | — | 10 | μA | $V_{DS} = 150\text{V}, V_{GS} = 0$ |
| Gate to source cutoff voltage | $V_{GS(off)}$ | 1.0 | — | 2.5 | V | $I_D = 1\text{mA}, V_{DS} = 10\text{V}$ |
| Static drain to source on state resistance | $R_{DS(on)}$ | — | 35 | 45 | $\text{m}\Omega$ | $I_D = 15\text{A}, V_{GS} = 10\text{V}^{\text{Note4}}$ |
| | $R_{DS(on)}$ | — | 42 | 75 | $\text{m}\Omega$ | $I_D = 15\text{A}, V_{GS} = 4\text{V}^{\text{Note4}}$ |
| Forward transfer admittance | $ y_{fs} $ | 18 | 30 | — | S | $I_D = 15\text{A}, V_{DS} = 10\text{V}^{\text{Note4}}$ |
| Input capacitance | C_{iss} | — | 2600 | — | pF | $V_{DS} = 10\text{V}$ |
| Output capacitance | C_{oss} | — | 820 | — | pF | $V_{GS} = 0$ |
| Reverse transfer capacitance | C_{rss} | — | 350 | — | pF | $f = 1\text{MHz}$ |
| Turn-on delay time | $t_{d(on)}$ | — | 25 | — | ns | $I_D = 15\text{A}, V_{GS} = 10\text{V}$ |
| Rise time | t_r | — | 180 | — | ns | $R_L = 2\Omega$ |
| Turn-off delay time | $t_{d(off)}$ | — | 600 | — | ns | |
| Fall time | t_f | — | 280 | — | ns | |
| Body-drain diode forward voltage | V_{DF} | — | 0.95 | — | V | $I_F = 30\text{A}, V_{GS} = 0$ |
| Body-drain diode reverse recovery time | t_{rr} | — | 110 | — | ns | $I_F = 30\text{A}, V_{GS} = 0$ $diF/dt = 50\text{A}/\mu\text{s}$ |

Note: 4. Pulse test

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Package Dimensions (Unit: mm)



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