

P40B10SL

Power MOSFETs
100V, 40A, N-channel

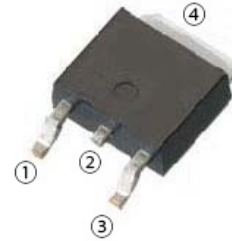
Feature

- N-channel
- SMD
- Low Ron
- 4.5V Gate Drive
- Low Capacitance
- Pb free terminal
- RoHS:Yes

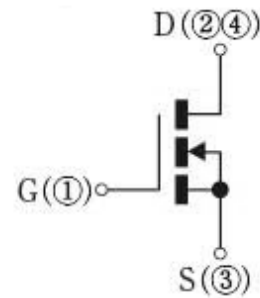
OUTLINE

Package (House Name): FB

Package (JEDEC Code): TO-252AA



Equivalent circuit



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

| Item | Symbol | Conditions | Ratings | Unit |
|--------------------------------|------------------|-------------------------------|------------|------|
| Storage temperature | Tstg | | -55 to 150 | °C |
| Channel temperature | Tch | | -55 to 150 | °C |
| Drain-source voltage | V _{DSS} | | 100 | V |
| Gate-source voltage | V _{GSS} | | ±20 | V |
| Continuous drain current(DC) | I _D | | 40 | A |
| Continuous drain current(Peak) | I _{DP} | Pulse width 10μs, duty=1/100 | 120 | A |
| Total power dissipation | P _T | | 62.5 | W |
| Single avalanche current | I _{AS} | Starting Tch=25°C Tch ≤ 150°C | 26 | A |
| Single avalanche energy | E _{AS} | Starting Tch=25°C Tch ≤ 150°C | 75 | mJ |

※ :See the original Specifications

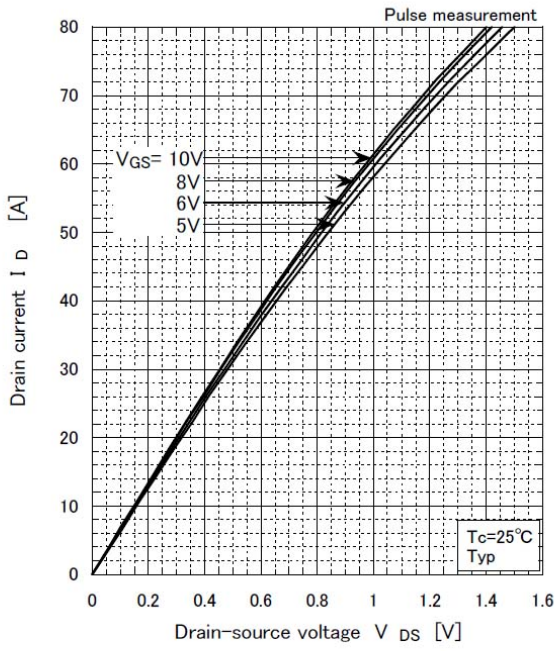
Electrical Characteristics (unless otherwise specified : Tc=25°C)

| Item | Symbol | Conditions | Ratings | | | Unit |
|---|---------------|--|---------|--------|--------|------|
| | | | MIN | TYP | MAX | |
| Drain-Source breakdown voltage | $V_{(BR)DSS}$ | ID=1mA, VGS=0V | 100 | | | V |
| Zero gate voltage drain current | I_{DSS} | VDS=100V, VGS=0V | | | 1 | μA |
| Gate-source leakage current | I_{GSS} | VGS=±20V, VDS=0V | | | ±0.1 | μA |
| Forward transconductance | g_{fs} | ID=20A, VDS=10V | 14.5 | 29 | | S |
| Static drain-source on-state resistance | $R_{DS(ON)}$ | ID=20A, VGS=10V | | 0.0148 | 0.0185 | Ω |
| Static drain-source on-state resistance | $R_{DS(ON)}$ | ID=20A, VGS=4.5V | | 0.0161 | 0.0215 | Ω |
| Gate threshold voltage | Vth | ID=1mA, VDS=10V | 1.5 | 2 | 2.5 | V |
| Source-drain diode forward voltage | V_{SD} | IS=40A, VGS=0V | | | 1.5 | V |
| Thermal resistance | Rth(j-c) | Junction to case, with heatsink ※ | | | 2 | °C/W |
| Total gate charge | Qg | VDD=80V, VGS=10V, ID=40A | | 66 | | nC |
| Gate to source charge | Qgs | VDD=80V, VGS=10V, ID=40A | | 12 | | nC |
| Gate to drain charge | Qgd | VDD=80V, VGS=10V, ID=40A | | 18.5 | | nC |
| Input capacitance | Ciss | VDS=25V, VGS=0V, f=1MHz | | 3210 | | pF |
| Reverse transfer capacitance | Crss | VDS=25V, VGS=0V, f=1MHz | | 120 | | pF |
| Output capacitance | Coss | VDS=25V, VGS=0V, f=1MHz | | 252 | | pF |
| Turn-on delay time | td(on) | ID=20A, RL=2.5Ω, VDD=50V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V | | 5.5 | | ns |
| Rise time | tr | ID=20A, RL=2.5Ω, VDD=50V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V | | 19 | | ns |
| Turn-off delay time | td(off) | ID=20A, RL=2.5Ω, VDD=50V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V | | 47 | | ns |
| Fall time | tf | ID=20A, RL=2.5Ω, VDD=50V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V | | 31 | | ns |
| Diode reverse recovery time | trr | IF=40A, VGS=0V, di/dt=100A/μs | | 54 | | ns |
| Diode reverse recovery charge | Qrr | IF=40A, VGS=0V, di/dt=100A/μs | | 107 | | nC |

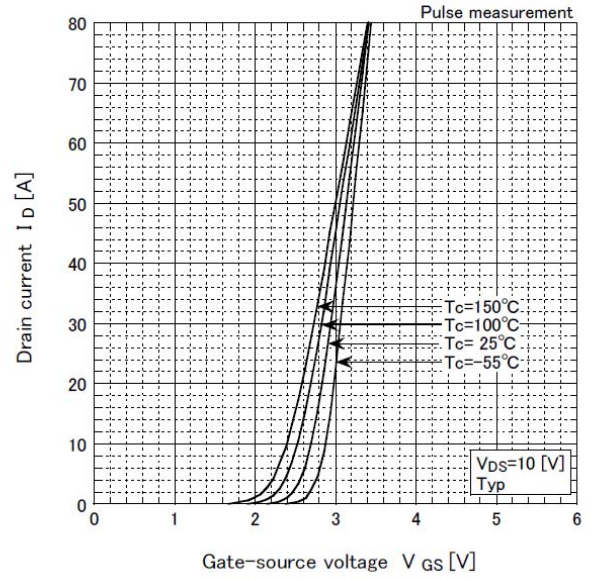
※ : See the original Specifications

CHARACTERISTIC DIAGRAMS

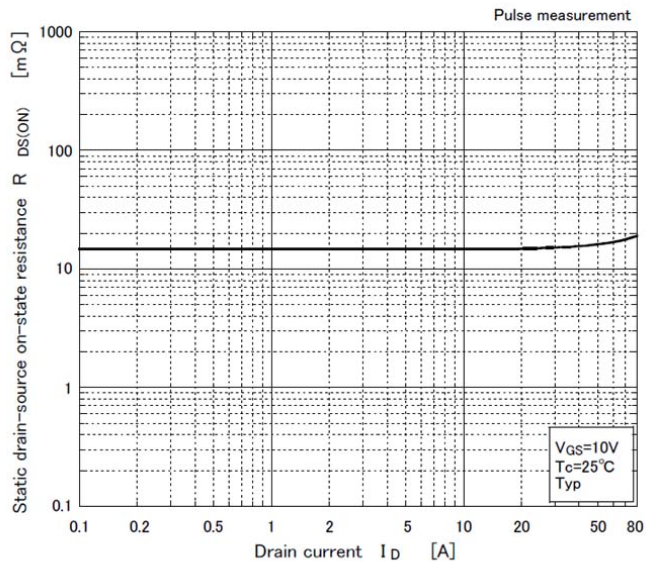
Typical output characteristics



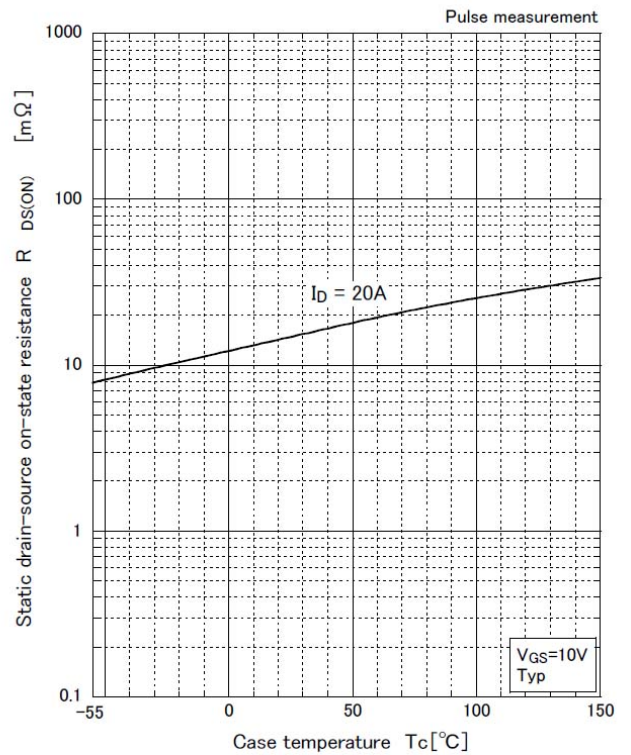
Transfer characteristics

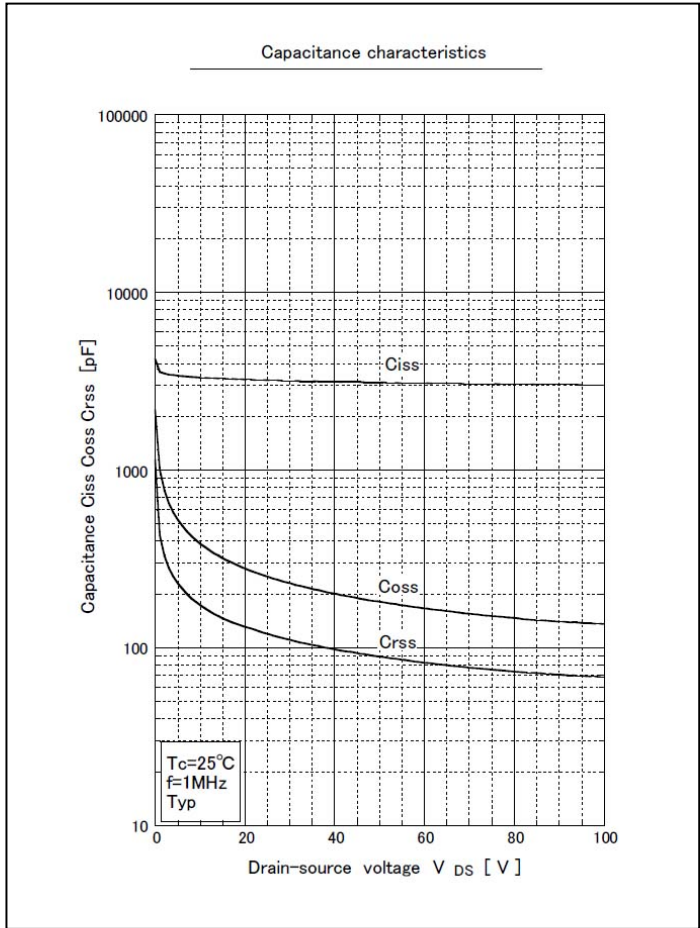
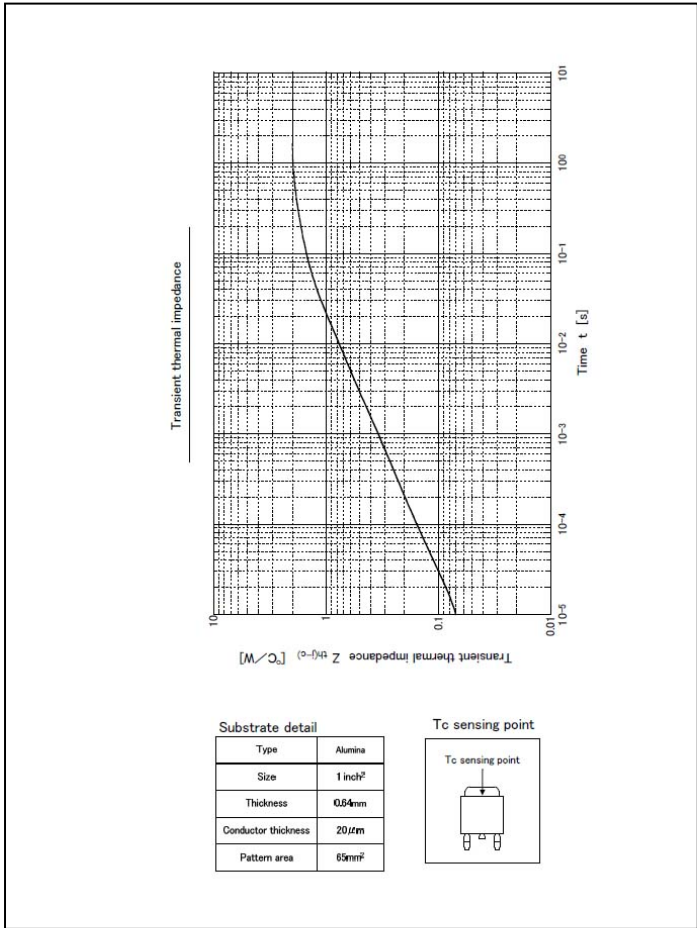
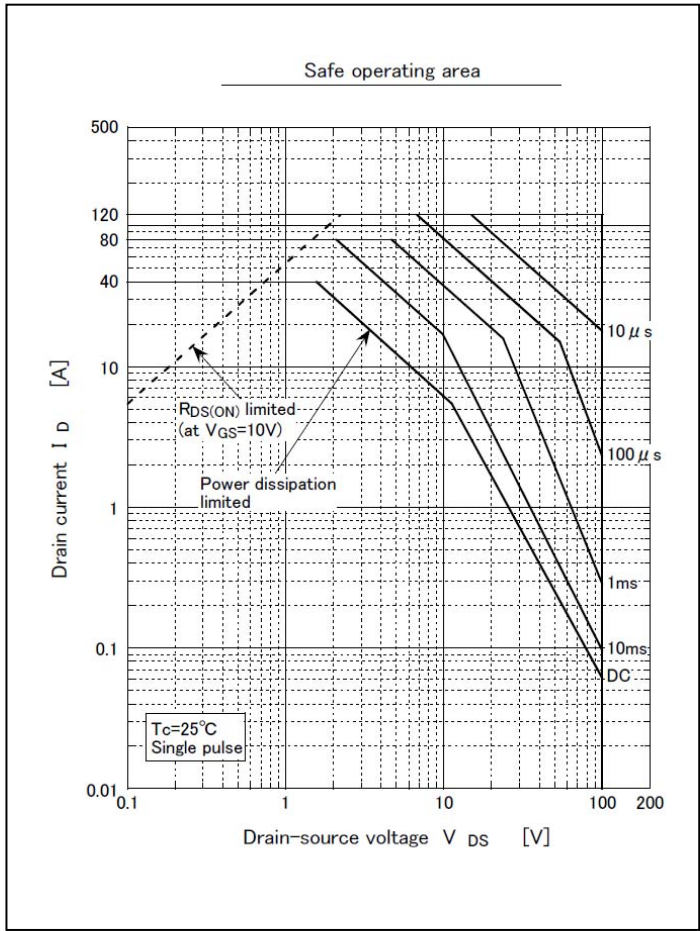
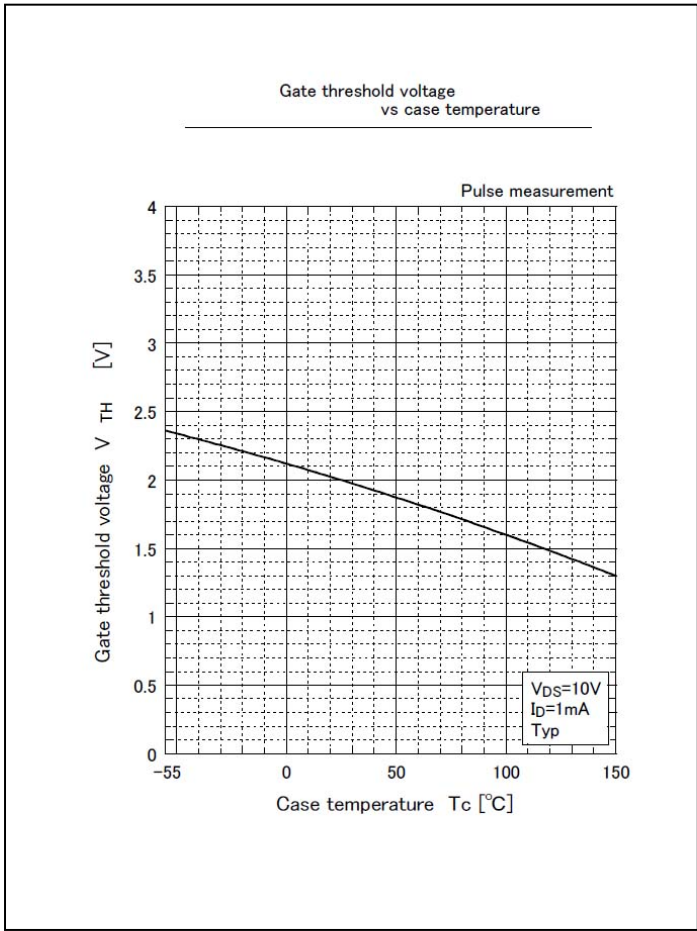


Static drain-source on-state resistance vs drain current

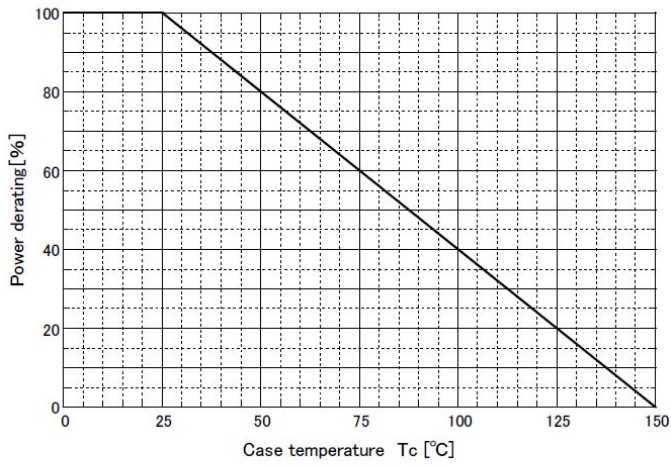


Static drain-source on-state resistance vs case temperature

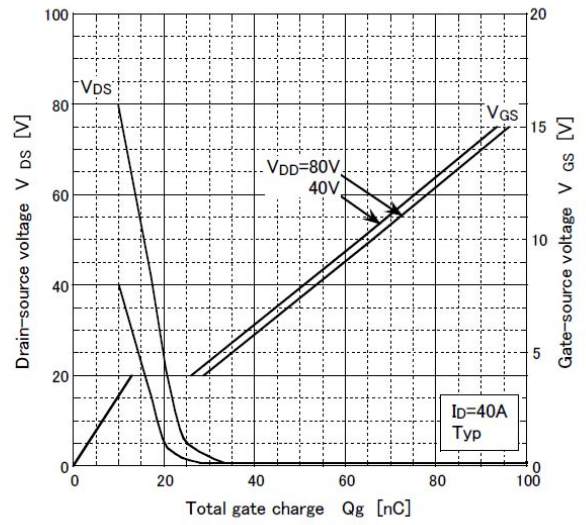




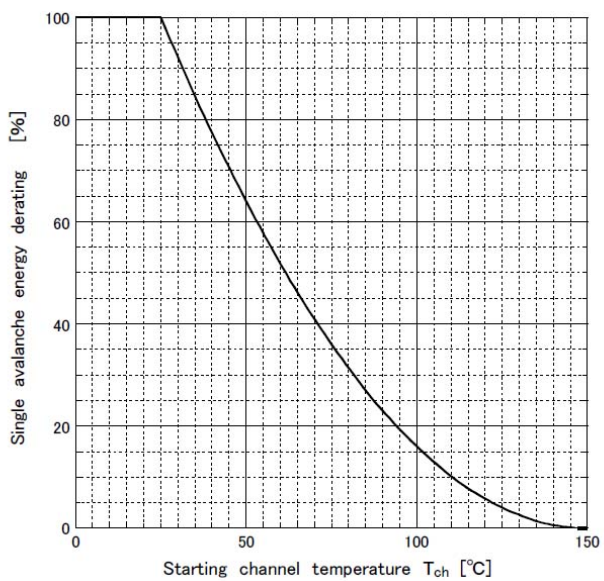
Power derating - case temperature



Gate charge characteristics



Single avalanche energy derating vs channel temperature

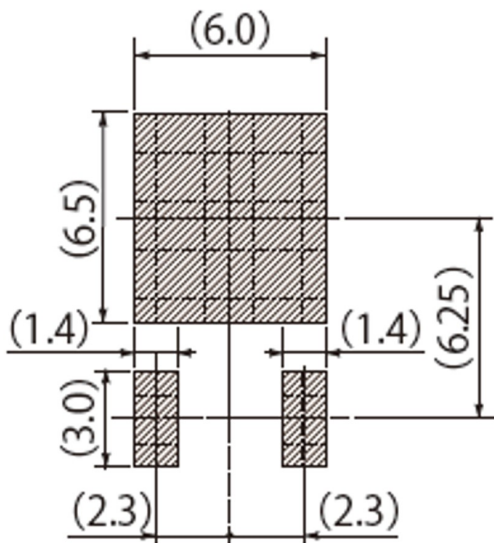
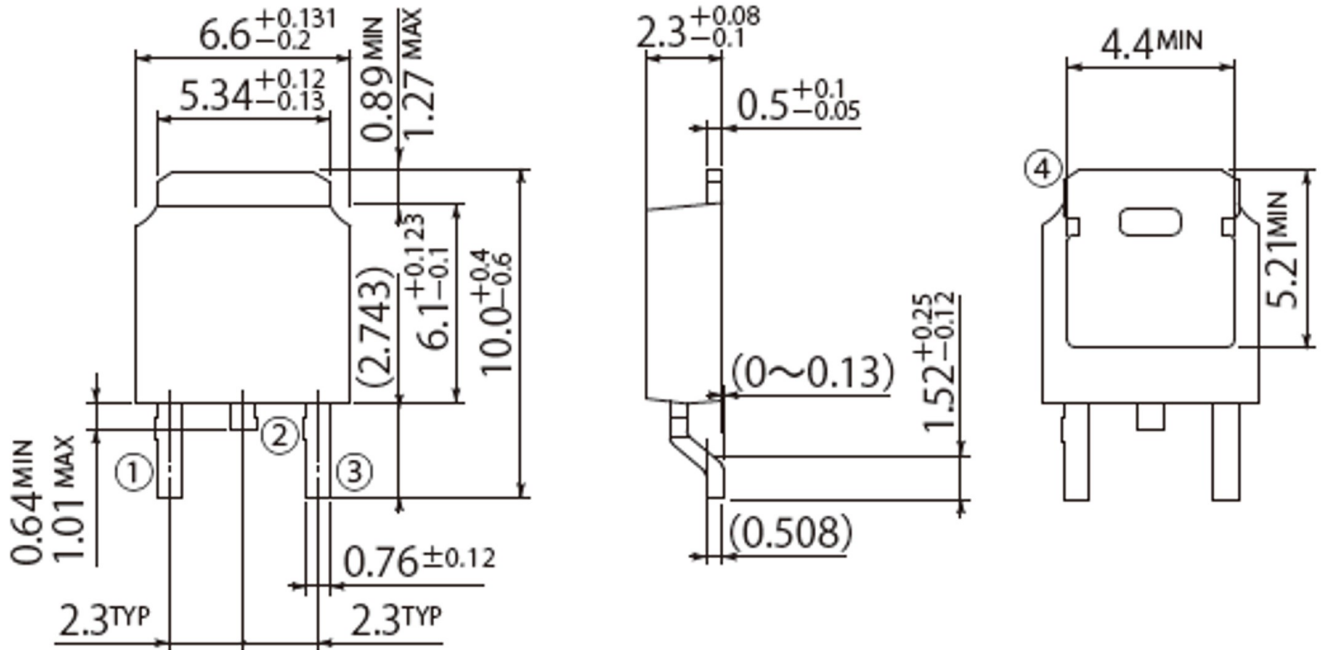


Outline Dimensions

unit:mm

G2

| | |
|------------|----------|
| JEDEC Code | TO-252AA |
| JEITA Code | - |
| House Name | FB |



Referential Soldering Pad

Notes

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