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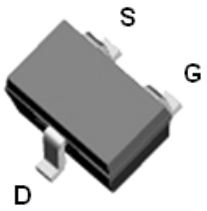
# PZP103BYB

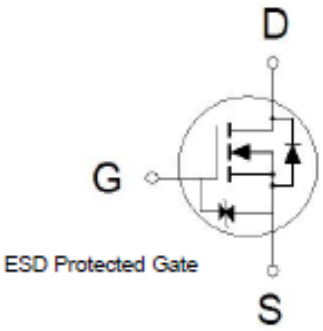
## N-Channel Enhancement Mode MOSFET

### PRODUCT SUMMARY

| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | $I_D$ |
|---|---|---|
| 30V | 3Ω @$V_{GS}$ = 4V | 0.3A |




SOT-523




### ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25 °C Unless Otherwise Noted)

| PARAMETERS/TEST CONDITIONS | | SYMBOL | LIMITS | UNITS |
|---|---|---|---|---|
| Gate-Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current[2] | $T_A$ = 25 °C | $I_D$ | 0.3 | A |
| | $T_A$ = 70 °C | | 0.2 | |
| Pulsed Drain Current[1] | | $I_{DM}$ | 3 | |
| Avalanche Current | | $I_{AS}$ | 1.2 | |
| Avalanche Energy | L = 1mH | $E_{AS}$ | 0.8 | mJ |
| Power Dissipation | $T_A$ = 25 °C | $P_D$ | 0.5 | W |
| | $T_A$ = 70 °C | | 0.3 | |
| Operating Junction & Storage Temperature Range | | $T_J$, $T_{STG}$ | -55 to 150 | °C |

### THERMAL RESISTANCE RATINGS

| THERMAL RESISTANCE | SYMBOL | TYPICAL | MAXIMUM | UNITS |
|---|---|---|---|---|
| Junction-to-Ambient | $R_{\theta JA}$ | | 220 | °C / W |

[1]Limited by maximum junction temperature.

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### ELECTRICAL CHARACTERISTICS ($T_J$ = 25 °C, Unless Otherwise Noted)

| PARAMETER | SYMBOL | TEST CONDITIONS | LIMITS | | | UNIT |
|---|---|---|---|---|---|---|
| | | | MIN | TYP | MAX | |
| **STATIC** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 100μA | 30 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 100μA | 0.9 | 1.3 | 1.5 | V |
| Gate-Body Leakage | $I_{GSS}$ | $V_{DS}$ = 0V, $V_{GS}$ = ±16V | | | ±30 | μA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 24V, $V_{GS}$ = 0V | | | 1 | μA |
| | | $V_{DS}$ = 20V, $V_{GS}$ = 0V , $T_J$ = 70 °C | | | 10 | |
| Drain-Source On-State Resistance[1] | $R_{DS(ON)}$ | $V_{GS}$ = 4V, $I_D$ = 0.1A | | 1 | 3 | Ω |
| | | $V_{GS}$ = 2.5V, $I_D$ = 0.01A | | 2 | 6 | |
| Forward Transconductance[1] | $g_{fs}$ | $V_{DS}$ = 5V, $I_D$ = 0.1A | | 1 | | S |
| **DYNAMIC** | | | | | | |
| Input Capacitance | $C_{iss}$ (VDS=15V) | $V_{GS}$ = 0V, f = 1MHz | | 35 | | pF |
| | $C_{iss(VDS=5V)}$ | | | 37 | | |
| Output Capacitance | $C_{oss}$ | $V_{GS}$ = 0V, $V_{DS}$ = 15V, f = 1MHz | | 9 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 5 | | |
| Gate Resistance | $R_g$ | $V_{GS}$ = 0V, $V_{DS}$ = 0V, f = 1MHz | | 518 | | Ω |
| Turn-On Delay Time[2] | $t_{d(on)}$ | $V_{DD}$ = 15V, $I_D$ ≅ 0.1A, $V_{GS}$ = 4V, $R_{GEN}$ = 6Ω | | 21 | | nS |
| Rise Time[2] | $t_r$ | | | 45 | | |
| Turn-Off Delay Time[2] | $t_{d(off)}$ | | | 86 | | |
| Fall Time[2] | $t_f$ | | | 88 | | |
| **SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J$ = 25 °C)** | | | | | | |
| Continuous Current | $I_S$ | | | | 0.3 | A |
| Forward Voltage[1] | $V_{SD}$ | $I_F$ = 0.1A, $V_{GS}$ = 0V | | | 1.3 | V |

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

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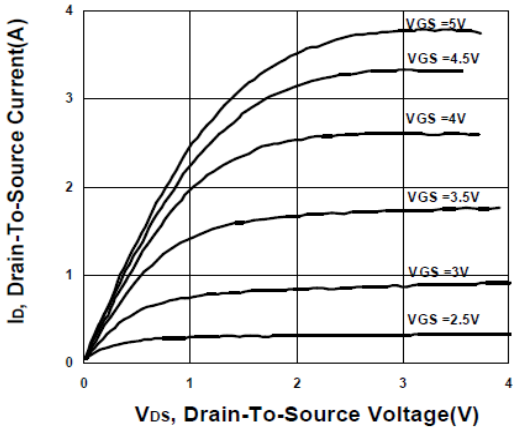
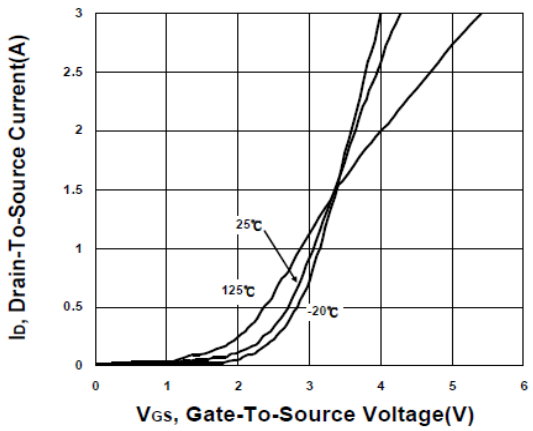
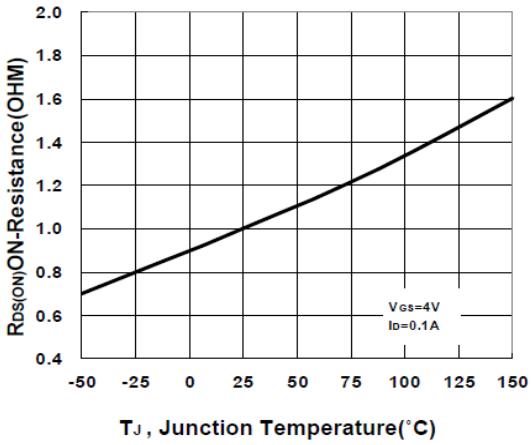
### Output Characteristics



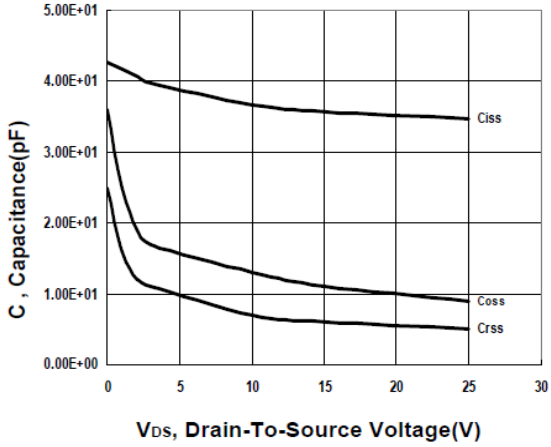

### Transfer Characteristics



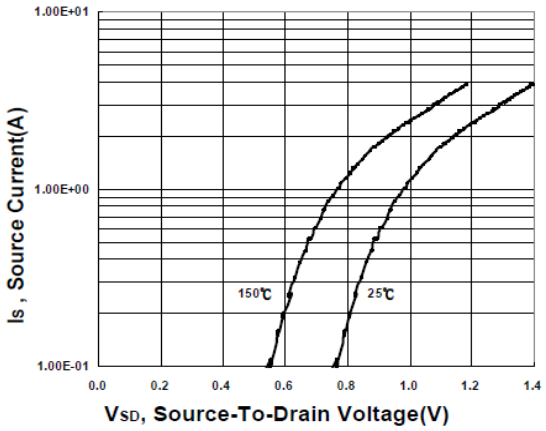

### On-Resistance VS Temperature



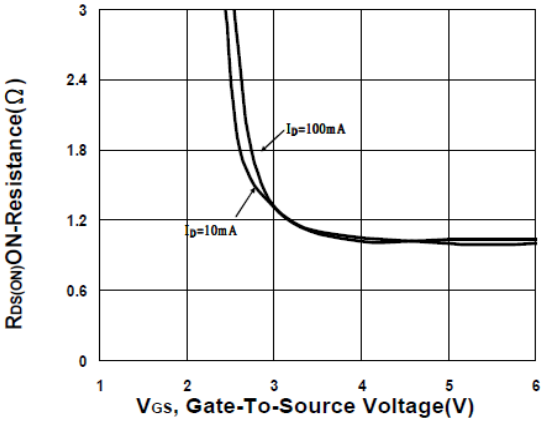

### Capacitance Characteristic




### Source-Drain Diode Forward Voltage




### ON-Resistance VS Gate-To-Source Voltage



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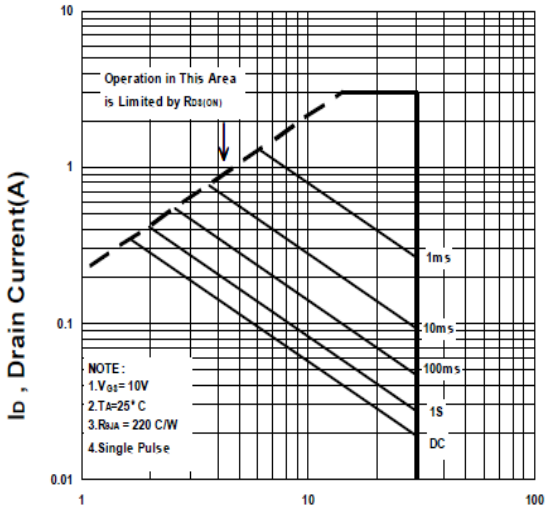
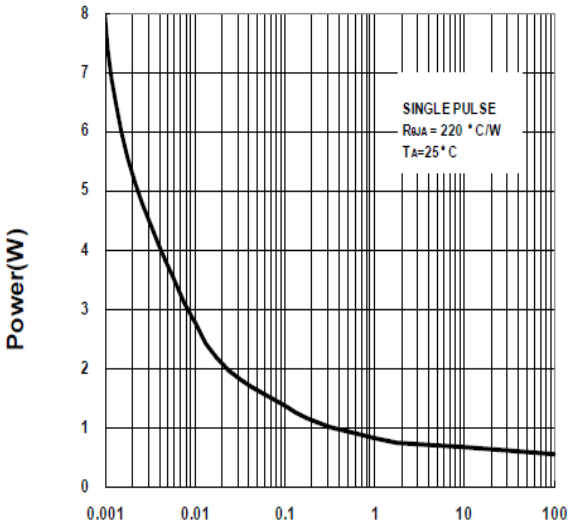
### Safe Operating Area



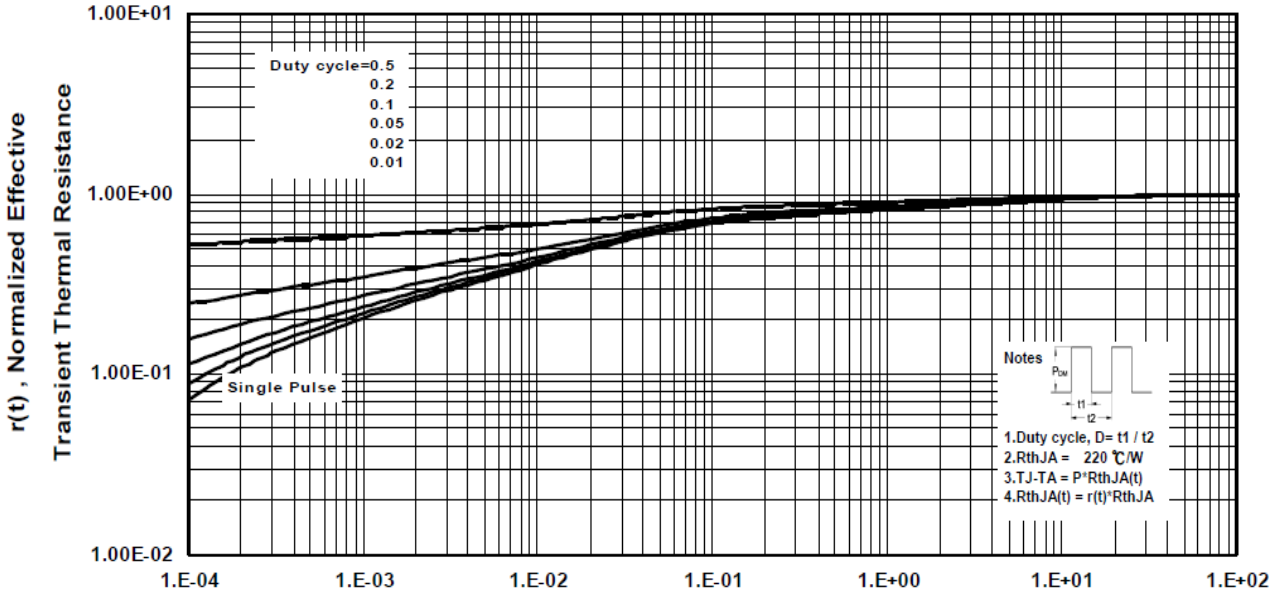

VDS, Drain-To-Source Voltage(V)

### Single Pulse Maximum Power Dissipation




Single Pulse Time(s)

### Transient Thermal Response Curve




T1 , Square Wave Pulse Duration[sec]

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### Package Dimension

**SOT-523 MECHANICAL DATA**

| Dimension | mm | | | Dimension | mm | | |
|---|---|---|---|---|---|---|---|
| | Min. | Typ. | Max. | | Min. | Typ. | Max. |
| A | 1.5 | | 1.7 | H | 0.1 | | 0.2 |
| B | 0.9 | | 1.1 | J | 0 | | 0.1 |
| C | 0.15 | | 0.25 | K | 0.7 | | 0.9 |
| D | 1.45 | | 1.75 | L | | 0.55 | |
| E | 0.25 | | 0.325 | M | 0.28 | | 0.44 |
| F | | 0.5 | | N | 0.75 | | 0.85 |
| G | 0.7 | | 0.8 | | | | |