TECH PUBLIC
台舟电子

# TPM20PB3S6

## Dual P-Channel 20V (D-S) MOSFET

www.sot23.com.tw

### Features

- $V_{DS}$ = -20V,$I_D$ = -3A
  $R_{DS(ON)}$ =120m Ω @ $V_{GS}$=-2.5V (Typ)
  $R_{DS(ON)}$ =85m Ω @ $V_{GS}$=-4.5V (Typ)
- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

### Application

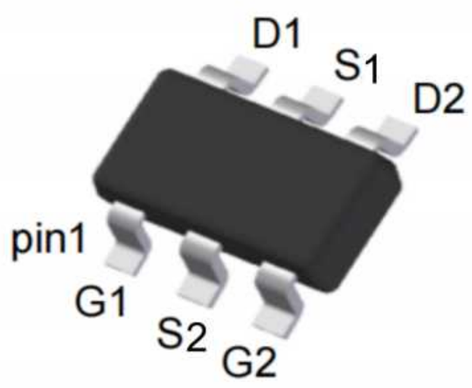
- PWM applications
- Power management

### Ordering Information

- Package: SOT23-6
- Shipping Qty:3000/7inch Tape□Reel

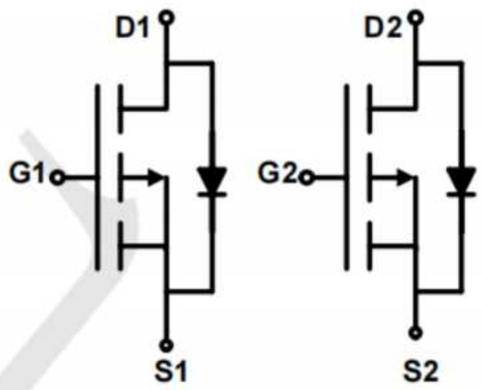
### Package and Pin Configuration

SOT23-6




Top View

### Circuit diagram




## Marking:312F

### ABSOLUTE MAXIMUM RATINGS(TA=25℃unless otherwise noted)

| TECH PUBLIC Parameter | Symbol | Limit | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | -20 | V |
| Gate-Source Voltage | $V_{GS}$ | ±10 | V |
| Drain Current-Continuous@ Current-Pulsed (Note 1) | $I_D$ | -3 | A |
| | $I_{DM}$ | -10 | A |
| Maximum Power Dissipation | $P_D$ | 1.1 | W |
| Operating Junction and Storage Temperature Range | $T_J$,$T_{STG}$ | -55 To 150 | ℃ |

### THERMAL CHARACTERISTICS

| | | | |
|---|---|---|---|
| Thermal Resistance,Junction-to-Ambient (Note 2) | $R_{\theta JA}$ | 110 | ℃/W |



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## ELECTRICAL CHARACTERISTICS (TA=25℃unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V $I_D$=-250μA | -20 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=-20V,$V_{GS}$=0V | | | -1 | μA |
| Gate-Body Leakage Current | $I_{GSS}$ | $V_{GS}$=±10V,$V_{DS}$=0V | | | ±100 | nA |
| **ON CHARACTERISTICS (Note 3)** | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=-250μA | -0.5 | | -1 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}$=-4.5V, $I_D$=-3A | | 85 | 100 | mΩ |
| | | $V_{GS}$=-2.5V, $I_D$=-2A | | 120 | 150 | |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=-5V,$I_D$=-3A | | 7 | | S |
| **DYNAMIC CHARACTERISTICS (Note4)** | | | | | | |
| Input Capacitance | $C_{lss}$ | $V_{DS}$=-10V,$V_{GS}$=0V, F=1.0MHz | | 300 | | PF |
| Output Capacitance | $C_{oss}$ | | | 65 | | PF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 50 | | PF |
| **SWITCHING CHARACTERISTICS (Note 4)** | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$=-10V,$I_D$=-1A $V_{GS}$=-4.5V,$R_{GEN}$=6Ω | | 12 | | nS |
| Turn-on Rise Time | $t_r$ | | | 15 | | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | | 80 | | nS |
| Turn-Off Fall Time | $t_f$ | | | 45 | | nS |
| Total Gate Charge | $Q_g$ | $V_{DS}$=-10V,$I_D$=-3A,$V_{GS}$=-4.5V | | 6 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | | 1 | | nC |
| Gate-Drain Charge | $Q_{gd}$ | | | 2.4 | | nC |
| **DRAIN-SOURCE DIODE CHARACTERISTICS** | | | | | | |
| Diode Forward Voltage (Note 3) | $V_{SD}$ | $V_{GS}$=0V,$I_S$=-1.25A | | | -1.2 | V |

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

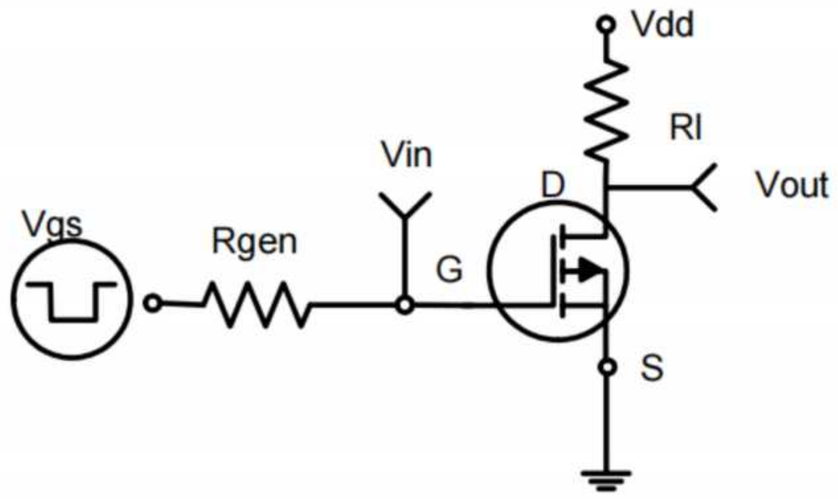



Figure1:Switching Test Circuit

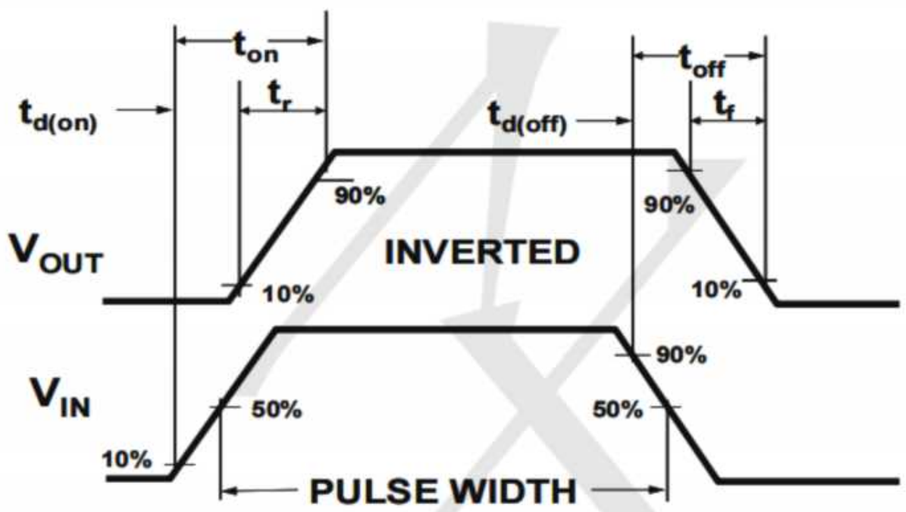



Figure 2:Switching Waveforms

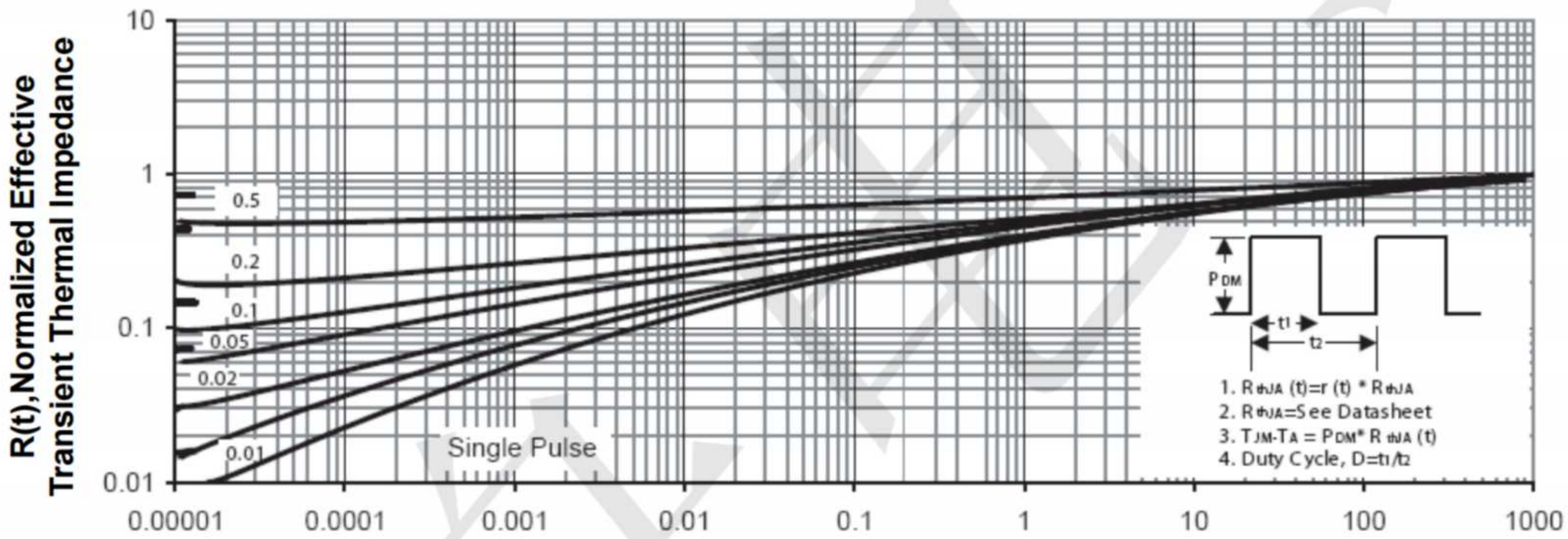
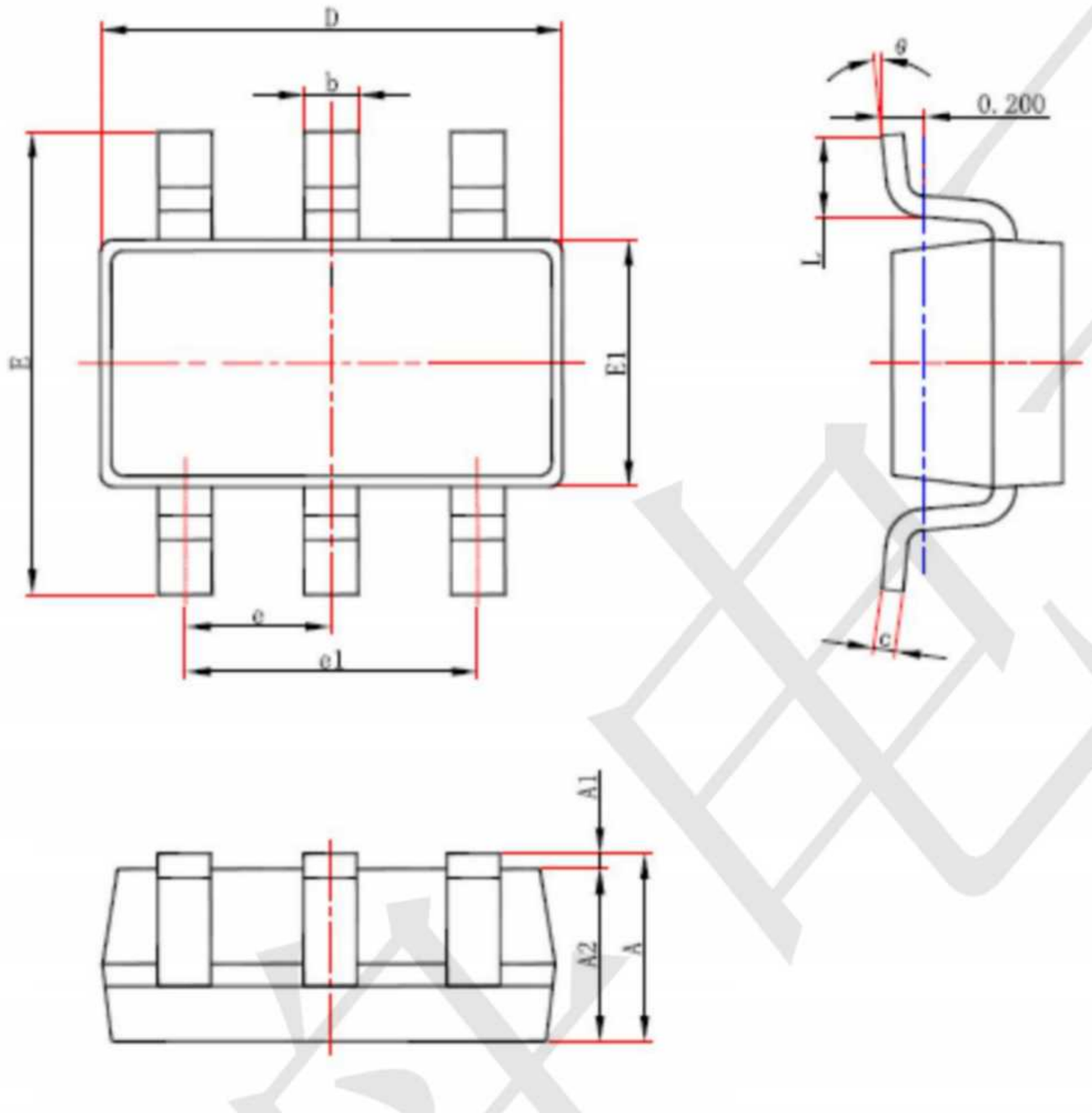



Figure 3: Normalized Maximum Transient Thermal Impedance

## SOT23-6 Package Outline Dimensions




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E1 | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |