

# TP3404

## N-Channel Power MOSFET

### Descriptions

N- CHANNEL MOSFET in a SOT-23 Plastic Package.

### Features

$V_{DS} (V) = 30V$

$I_D = 6.5 A (V_{GS} = 10V)$

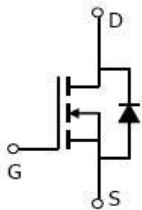
$R_{DS(ON)} < 22m\Omega (V_{GS} = 10V)$

$R_{DS(ON)} < 30m\Omega (V_{GS} = 4.5V)$

### Applications

This device is suitable for use as a load switch or in PWM applications.

### Equivalent Circuit



### Pinning



PIN 1 : S

PIN 2 : G

PIN 3 : D

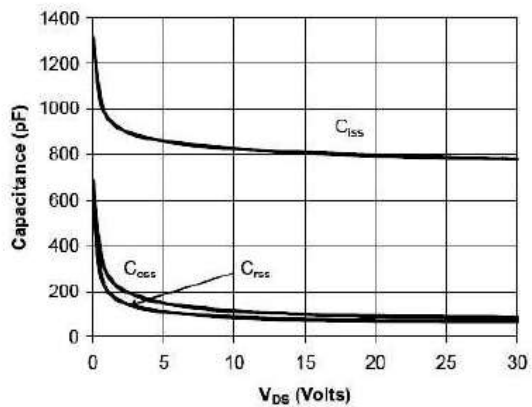
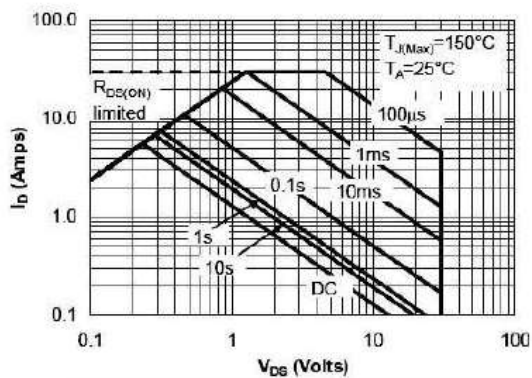
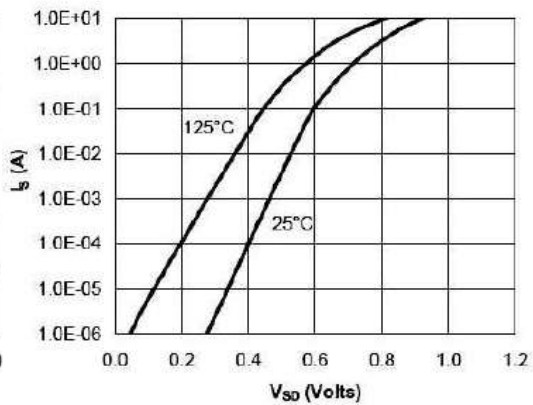
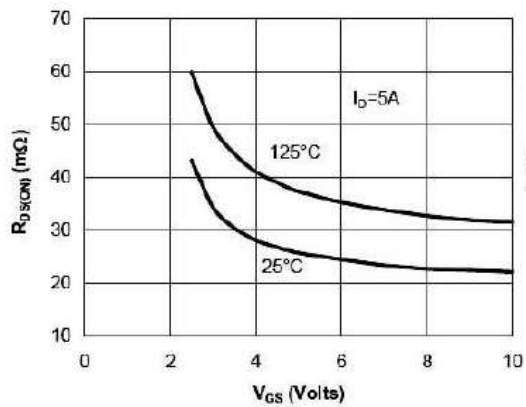
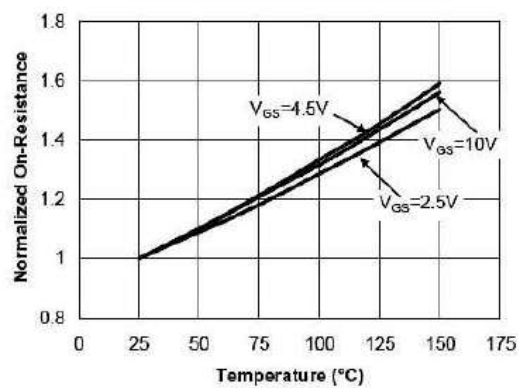
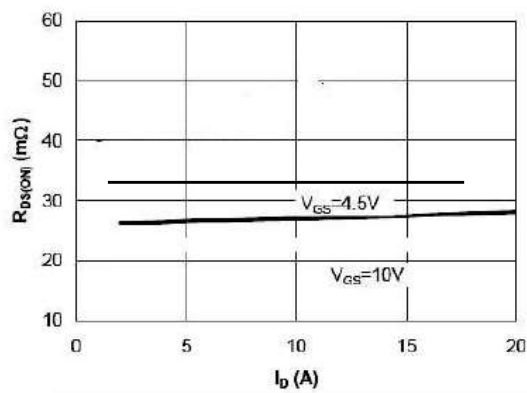
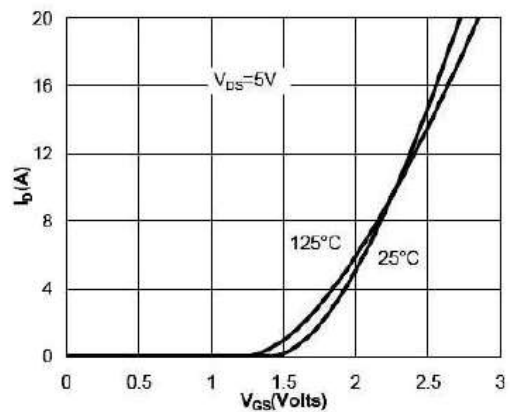
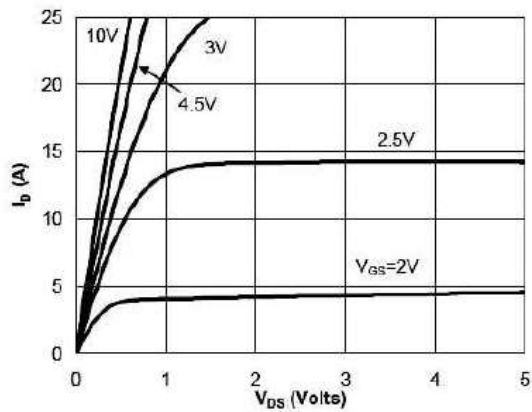
**Absolute Maximum Ratings(Ta=25°C)**

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Drain Current – Continuous	$I_D$	6.5	A
Drain Current- Continuous	$I_D(T_a=70^\circ\text{C})$	5.2	A
Pulsed Drain Current	$I_{DM}$	34	A
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Total Power Dissipation	$P_D$	1.4	W
Total Power Dissipation	$P_D(T_a=70^\circ\text{C})$	1.0	W
Operating and Storage Junction Temperature Range	$T_J, T_{STG}$	-55 to 150	$^\circ\text{C}$

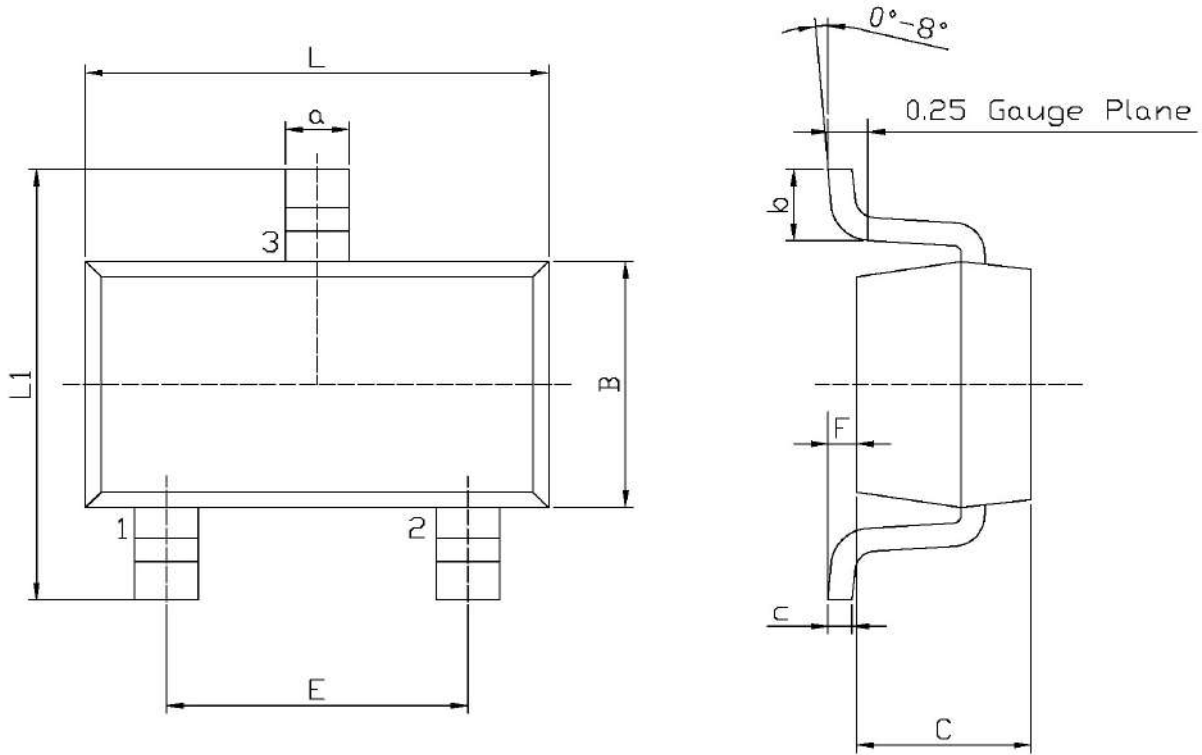
**Electrical Characteristics(Ta=25°C)**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V$ $I_D=250\mu A$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=24V$ $V_{GS}=0V$			1	$\mu A$
		$V_{DS}=24V$ $V_{GS}=0V$ $T_J=55^\circ\text{C}$			5	$\mu A$
Gate–Body Leakage.	$I_{GSS}$	$V_{GS}=\pm 20V$ $V_{DS}=0V$			$\pm 0.1$	$\mu A$
On–State Drain Current	$I_{D(on)}$	$V_{GS}=4.5V$ $V_{DS}=5V$	30			A
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}$ $I_D=250\mu A$	1.2	1.6	2.5	V
Static Drain–Source On–Resistance	$R_{DS(on)(1)}$	$V_{GS}=10V$ $I_D=6.5A$		18	22	m $\Omega$
	$R_{DS(on)(2)}$	$V_{GS}=10V$ $I_D=6.5A$ $T_J=125^\circ\text{C}$			39	
	$R_{DS(on)(3)}$	$V_{GS}=4.5V$ $I_D=5A$		23	30	
Forward Transconductance	$g_{FS}$	$V_{DS}=5V$ $I_D=5A$	8.5			S
Drain–Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V$ $I_S=1A$		0.77	1	V
Input Capacitance	$C_{iss}$	$V_{DS}=15V$ $V_{GS}=0V$ $f=1\text{MHz}$		345	690	pF
Output Capacitance	$C_{oss}$			55		
Reverse Transfer Capacitance	$C_{rss}$			32		
Turn–On Delay Time	$t_{d(on)}$	$V_{GS}=10V$ $R_L=2.7\Omega$ $V_{DS}=15V$ $R_{GEN}=6\Omega$		2.8		ns
Turn–On Rise Time	$t_r$			7.2		
Turn–Off Delay Time	$t_{d(off)}$			15.8		
Turn–Off Fall Time	$t_f$			4.6		

### Electrical Characteristic Curve



Package Dimensions

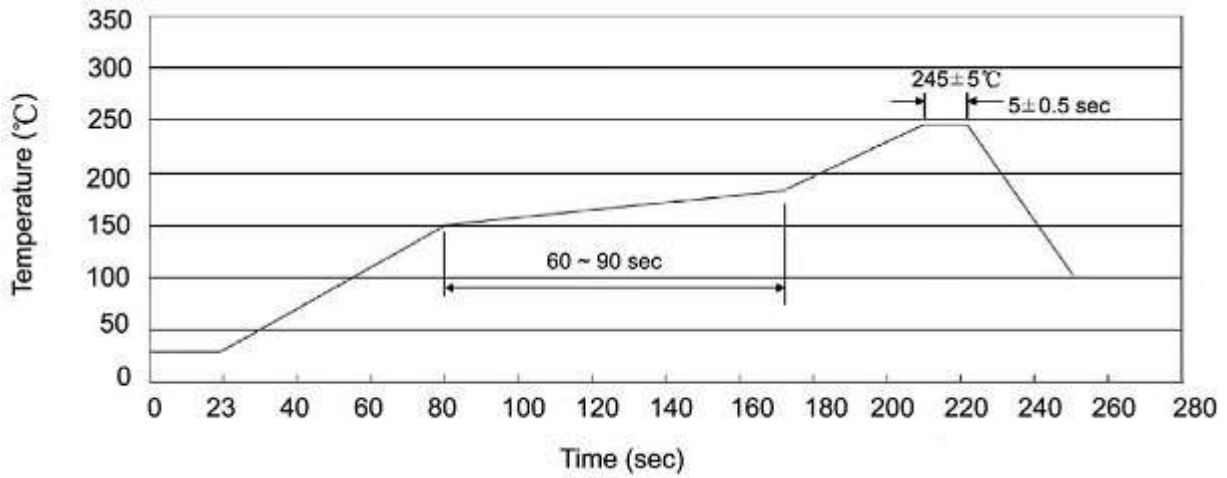


Unit: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.82	3.02	a	0.35	0.50
B	1.50	1.70	c	0.10	0.20
C	0.90	1.30	b	0.35	0.55
L1	2.60	3.00	F	0	0.15
E	1.80	2.00			

SOT23

### Temperature Profile for IR Reflow Soldering(Pb-Free)



Note:

1. Preheating: 25~150°C, Time: 60~90sec.
2. Peak Temp.: 245±5°C, Duration: 5±0.5sec.
3. Cooling Speed: 2~10°C/sec.

### Resistance to Soldering Heat Test Conditions

Temp.: 260±5°C      Time: 10±1 sec

### Packaging SPEC.

REEL

Package Type	Units					Dimension (unit: mm <sup>3</sup> )		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOT-23	3,000	10	30,000	4	120,000	7" x8	210×205×205	445×230×435