

**• General Description**

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

**• Features**

- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching

**• Application**

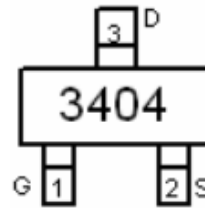
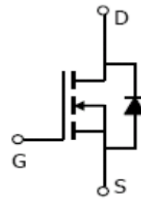
- PWM
- SMPS 2<sup>nd</sup> Synchronous Rectifier
- BLDC Motor driver

**• Product Summary**

$V_{DS} = 30V$

$R_{DS(ON)} = 19m\Omega$

$I_D = 5A$



SOT-23

**• Ordering Information:**

Part NO.	ZM3404
Marking	3404
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

**• Absolute Maximum Ratings ( $T_C = 25^\circ C$ )**

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D @ T_C = 25^\circ C$	5	A
	$I_D @ T_C = 75^\circ C$	3.8	A
	$I_D @ T_C = 100^\circ C$	3.1	A
Pulsed Drain Current	$I_{DM}$	30	A
Total Power Dissipation( $T_A = 25^\circ C$ )	$P_D @ T_A = 25^\circ C$	1.3	W
Total Power Dissipation( $T_A = 70^\circ C$ )	$P_D @ T_A = 70^\circ C$	0.9	W
Operating Junction Temperature	$T_J$	-55 to 150	$^\circ C$
Storage Temperature	$T_{STG}$	-55 to 150	$^\circ C$

**•Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	1.2	1.8	2.5	V
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			1.0	$\mu A$
Gate- Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 100$	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 4.5A$		19	27	m $\Omega$
		$V_{GS} = 4.5V, I_D = 4A$		28	40	m $\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS} = 5V, I_D = 5A$	10	15		S
Source-Drain Voltage	$V_{SD}$	$V_{GS} = 0V, I_S = 1A$			1.3	V

**•Electronic Characteristics**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	$C_{iss}$	$V_{GS} = 0V$	-	390	-	pF
Output capacitance	$C_{oss}$	$V_{DS} = 15V$	-	86	-	
Reverse transfer capacitance	$C_{rss}$	$f = 1MHz$	-	40	-	

**•Gate Charge characteristics( $T_a = 25^\circ C$ )**

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	$Q_g$	$V_{DD} = 15V$	-	2.7	-	nC
Gate - Source charge	$Q_{gs}$	$I_D = 5A$	-	0.7	-	
Gate - Drain charge	$Q_{gd}$	$V_{GS} = 10V$	-	1.2	-	

Note: ① Pulse Test : Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$  ;

Fig.1 Power Dissipation

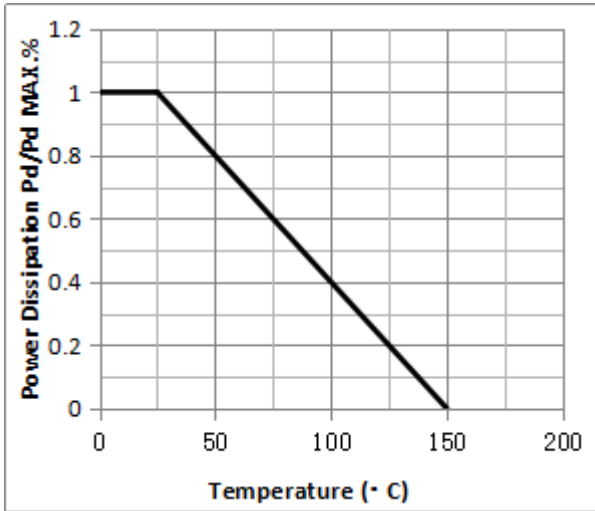


Fig.2 Typical output Characteristics

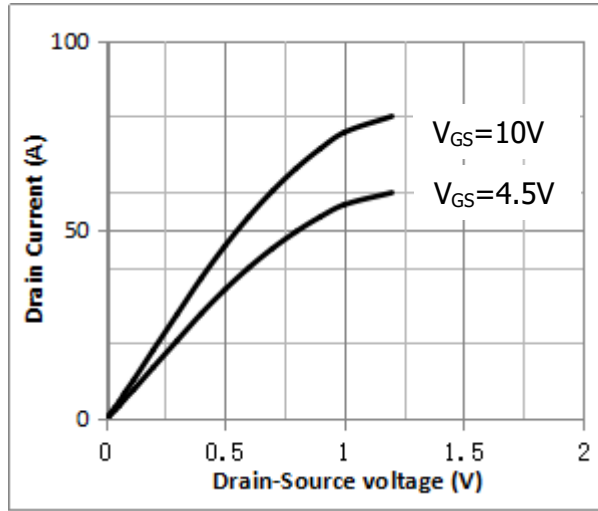


Fig.3 Threshold Voltage V.S Junction Temperature

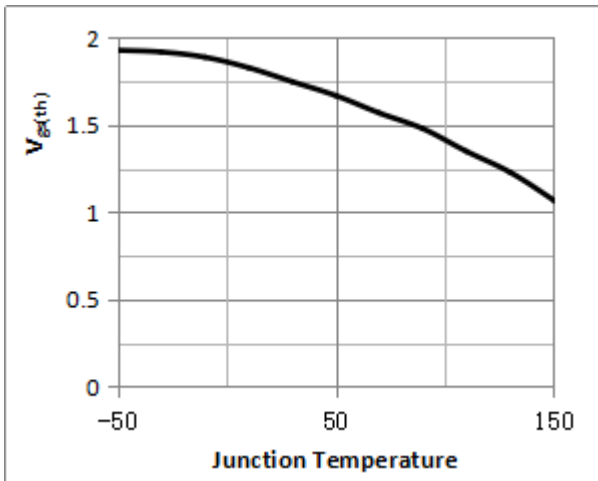


Fig.4 Resistance V.S Drain Current

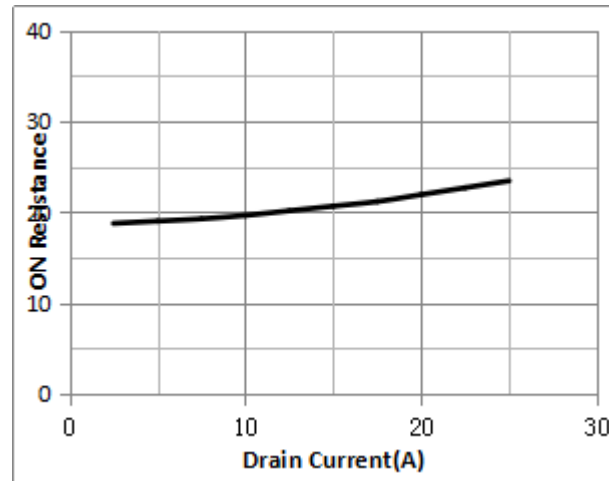


Fig.5 On-Resistance VS Gate Source Voltage

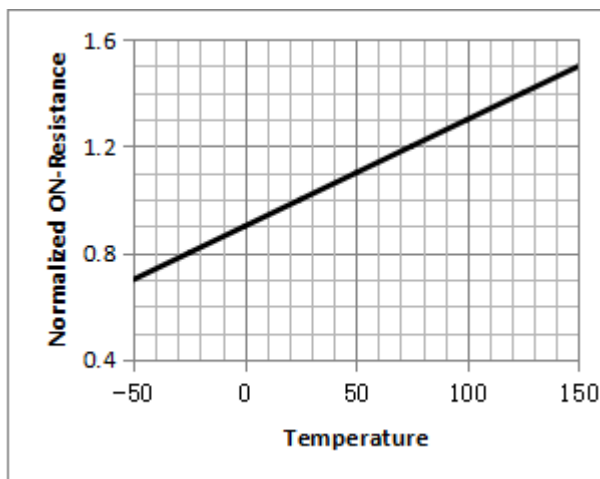


Fig.6 On-Resistance V.S Junction Temperature

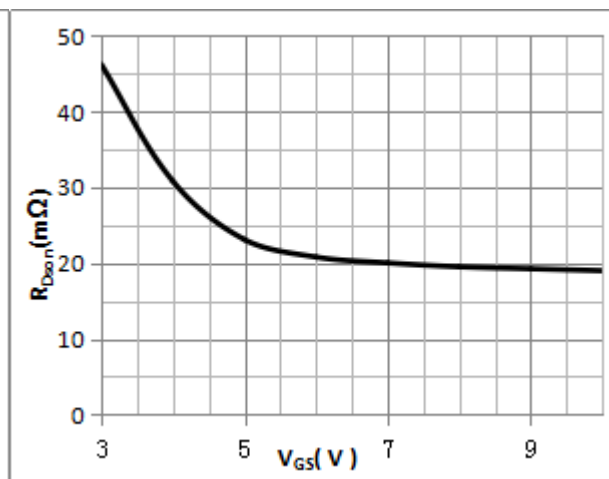


Fig.7 Switching Time Measurement Circuit

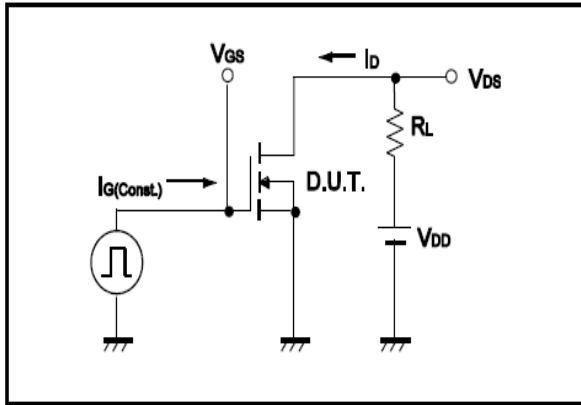


Fig.8 Gate Charge Waveform

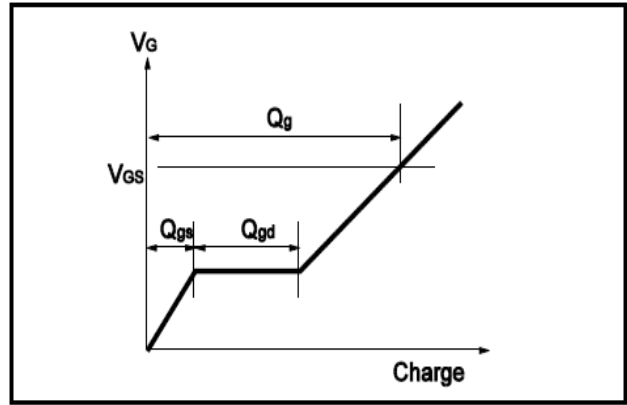


Fig.9 Switching Time Measurement Circuit

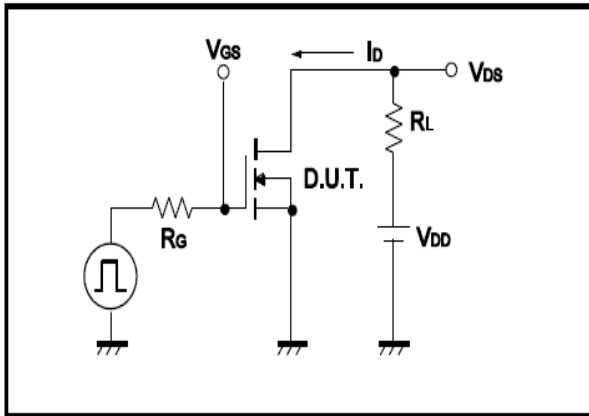


Fig.10 Gate Charge Waveform

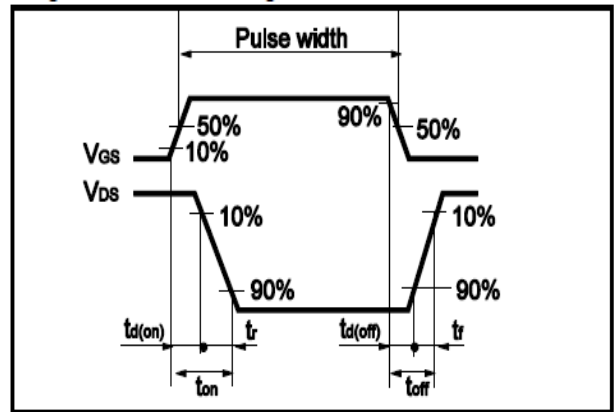


Fig.11 Avalanche Measurement Circuit

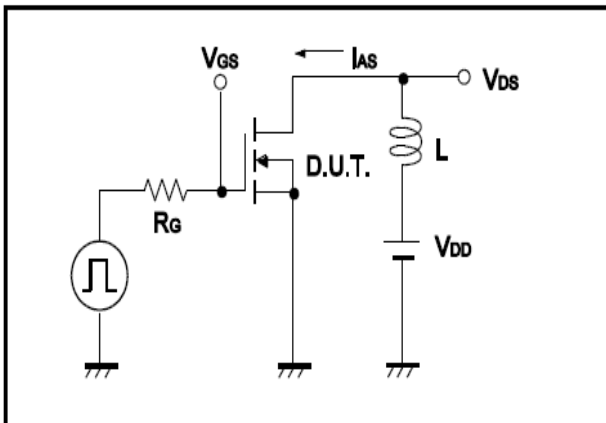
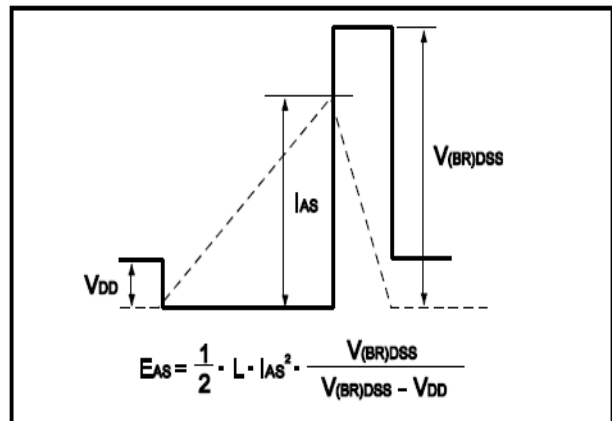


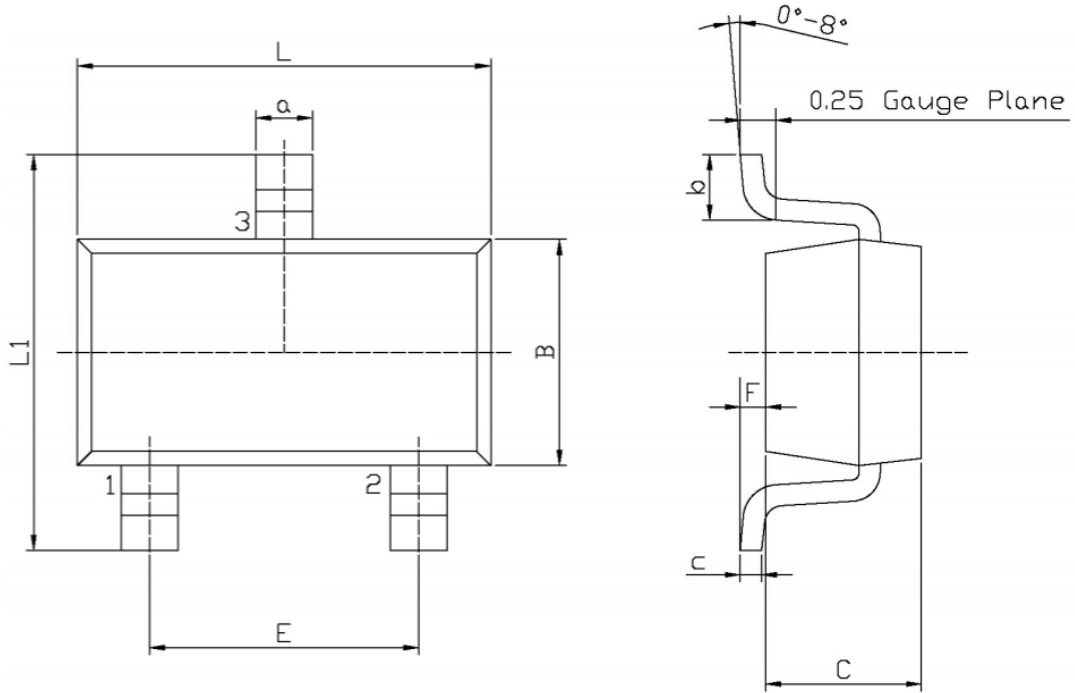
Fig.12 Avalanche Waveform





• Dimensions (SOT-23)

Unit: mm



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			