● General Description

The ZM520P02T combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

● Features

- ■ Advance high cell density Trench technology
- ■Low $R_{DS(ON)}$ to minimize conductive loss
- ■Low Gate Charge for fast switching
- ■Low Thermal resistance

●Application

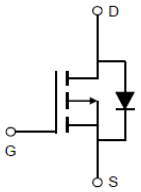
- ■Load Switches
- ■DC/DC
- ■BLDC Motor driver

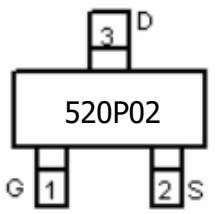
● Product Summary

V_{DS} =-20V

$R_{DS(ON)}$ =52mΩ

I_D =-3.2A





RoHS

SOT23-3

●Ordering Information:

Part NO.	ZM520P02T
Marking	520P02
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

●Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	$I_{D@}$TC=25℃	-3.2	A
	$I_{D@}$TC=75℃	-2.4	A
	I_{D} @TC=100℃	-2.0	A
Pulsed Drain Current ①	I_{DM}	-9	A
Total Power Dissipation(TC=25℃)	P_D@TC=25℃	1.5	W
Total Power Dissipation(TA=25℃)	P_D@TA=25℃	0.7	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy@L=0.1mH	E_{AS}	10	mJ

Avalanche Current@L=0.1mH	I_{AS}	5	A

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	80	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	180	° C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	265	° C

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V,I_D =-250uA	-20			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =-250uA	-0.3		-1	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V, V_{GS} =0V			-1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±10V ,V_{DS} =0V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-3.2A		52	67	mΩ
		V_{GS}=-2.5V, I_D=-3.2A		70	91	mΩ
Forward Transconductance	g_{FS}	V_{DS} =-10V, I_D=-3.2A		4		s
Source-drain voltage	V_{SD}	Is=-3.2A		0.8	1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	Ciss	f = 1MHz	-	450	-	pF
Output capacitance	Coss		-	63	-	
Reverse transfer capacitance	Crss		-	57	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} =-15V	-	5	-	nC
Gate - Source charge	Qgs	I_D =-10A	-	2.5	-	
Gate - Drain charge	Qgd	V_{GS} =-10V	-	3	-	

Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

② Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate；

Fig.1 Gate-Charge Characteristics

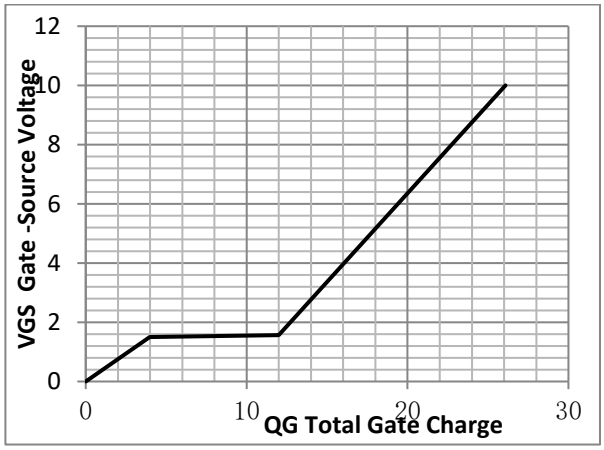


Fig.2 Capacitance Characteristics

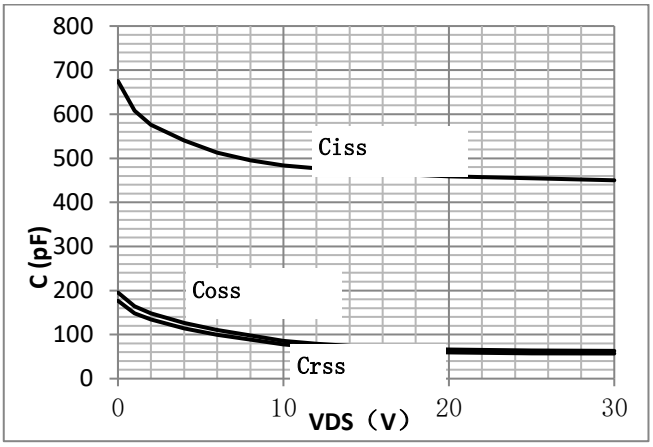


Fig.3 Power Dissipation

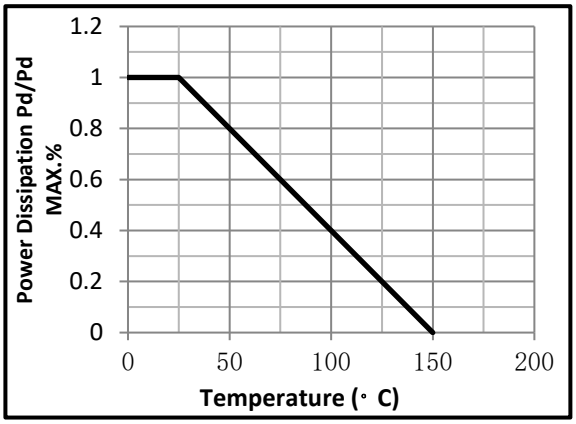


Fig.4 Typical output Characteristics

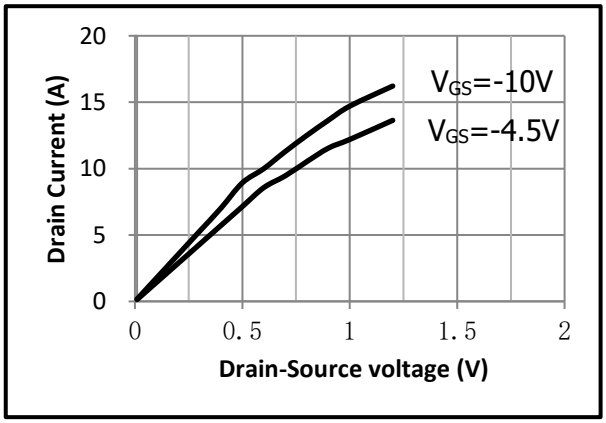


Fig.5 Threshold Voltage V.S Junction Temperature

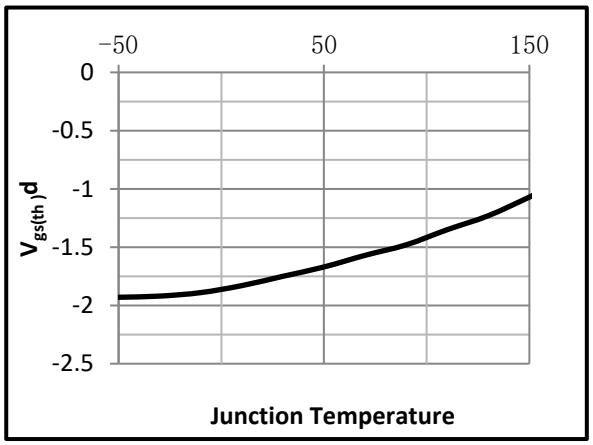


Fig.6 Resistance V.S Drain Current

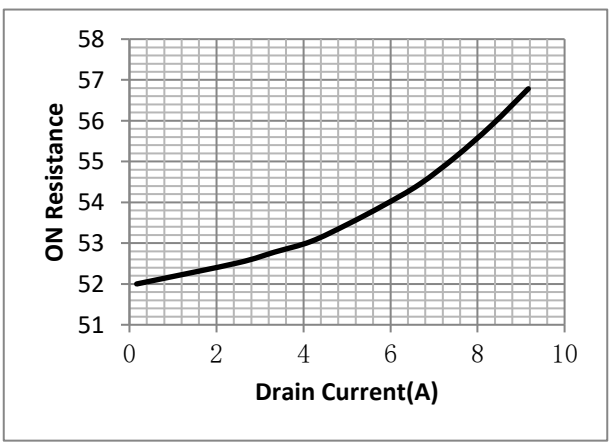


Fig.7 On-Resistance VS Gate Source Voltage

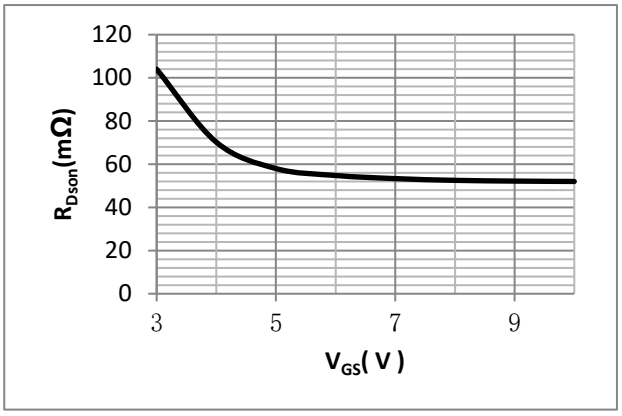


Fig.8 On-Resistance V.S Junction Temperature

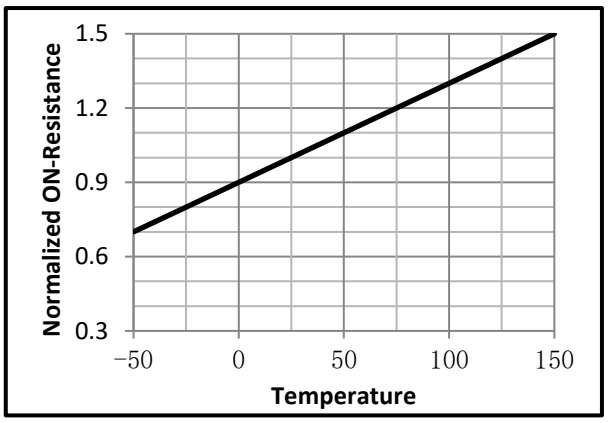


Fig.9 Switching Time Measurement Circuit

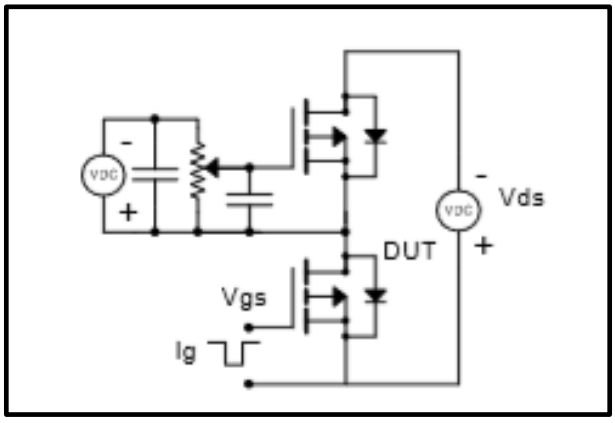


Fig.10Gate Charge Waveform

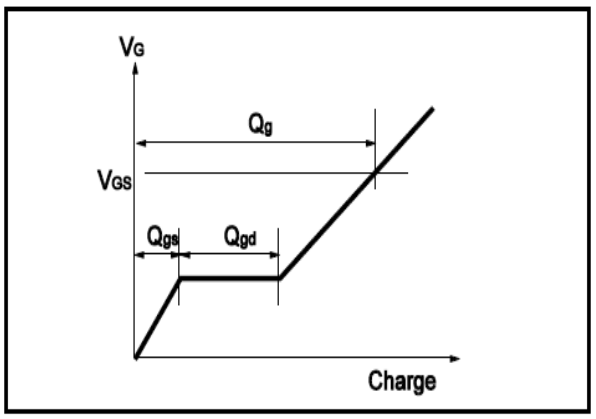


Fig.11 Switching Time Measurement Circuit

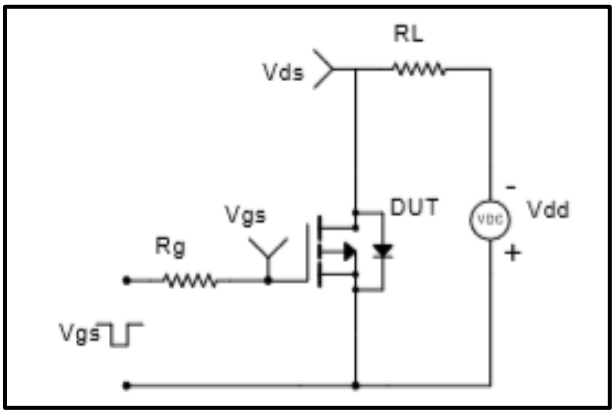
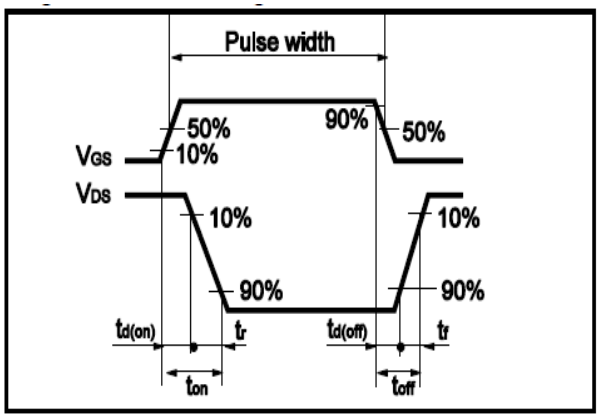
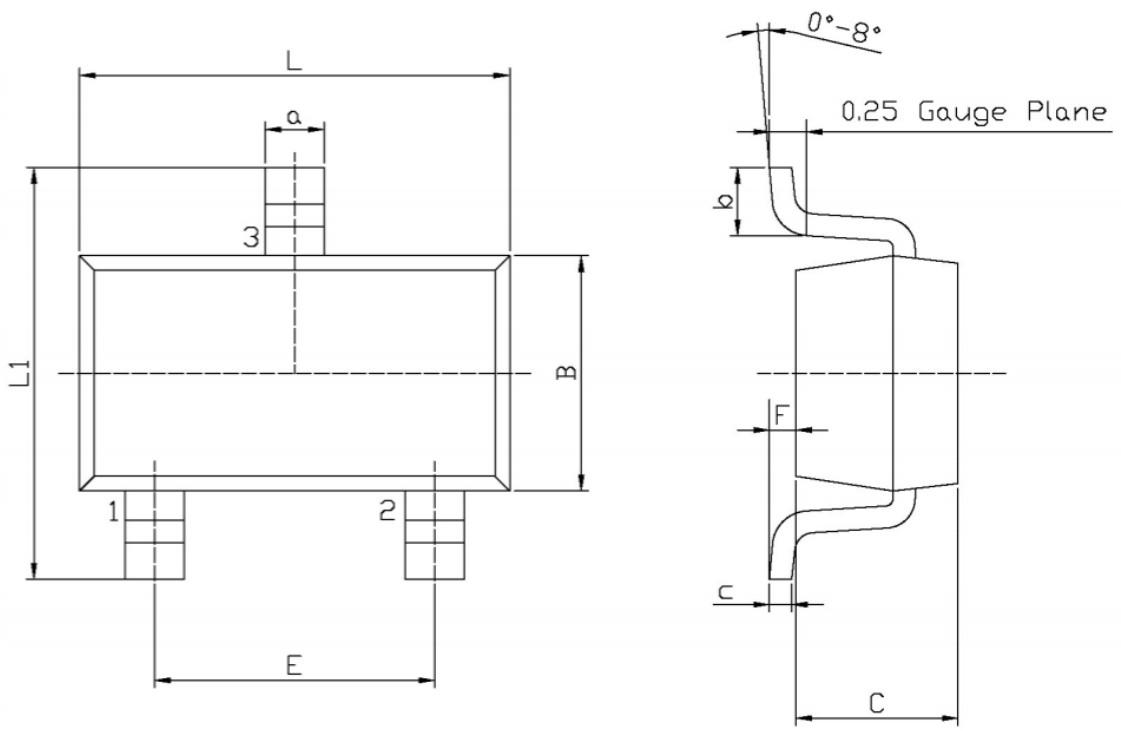


Fig.12 Gate Charge Waveform



• Dimensions (SOT23-3)

Unit：mm 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			