P-CHANNEL ENHANCEMENT MODE POWER MOSFET

TF200P02L

● General Description

The TF200P02L 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

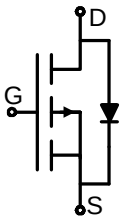
MB/VGA Vcore

SMPS 2nd Synchronous Rectifier

POL application

BLDC Motor driver

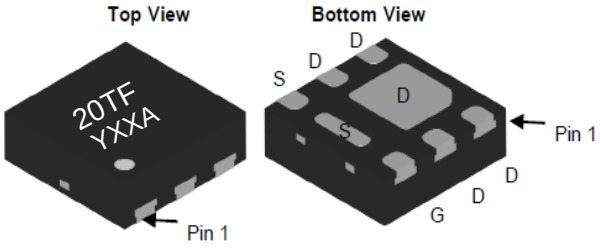
● Product Summary



V_{DS}=-20V I_D=-10A

$R_{DSON(-4.5V\ typ)}$ =18mΩ

$R_{DSON(-2.5V\ typ)}$ =24mΩ



DFN2x2-6L

●Ordering Information:

Part NO.	TF200P02L
Marking1	20:TF200P02L; TF:tuofeng
Marking2	Y:year code; XX:Week; A:device code;
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}	±12	V
Continuous Drain Current	$I_{D@}T_C$=25℃	-10	A
	$I_{D@}T_C$=75℃	-7.0	A
	$I_{D\ @}T_C$=100℃	-6.0	A
Pulsed Drain Current ①	I_{DM}	25	A
Total Power Dissipation②	$P_D@T_C$=25℃	2.0	W
Total Power Dissipation	$P_D@T_A$=25℃	0.5	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case②	R_{thJC}	-	-	8.0	°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	55	°C/W
Soldering temperature, wavesoldering for 8s	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	-0.50	-0.77	-0.95	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=-20V, V_{GS} =0V			1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS} =0V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-5.5A		18.0	25.0	mΩ
		V_{GS}=-2.5V, I_D=-4.0A		24.0	30.0	mΩ
Forward Transconductance	g_{FS}	V_{DS} =-10V, I_D=-5.5A		10		S
Source-drain voltage	V_{SD}	Is=-5.5A		0.83	1.00	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	f = 1MHz	-	1980	-	pF
Output capacitance	C_{oss}		-	243.0	-	
Reverse transfer capacitance	C_{rss}		-	226.0	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	V_{DD} =-10V	-	15.0	-	nC
Gate - Source charge	Q_{gs}	I_D = -5.0A	-	2.50	-	
Gate - Drain charge	Q_{gd}	V_{GS} = - 4.5V	-	4.30	-	

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 Power Dissipation Derating Curve

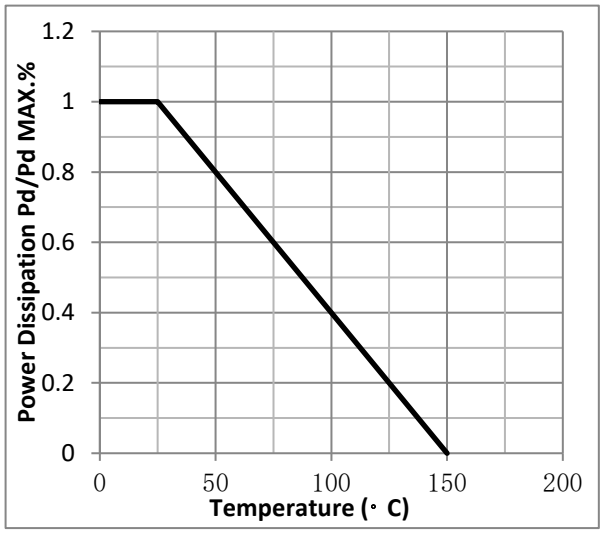


Fig.2 Typical output Characteristics

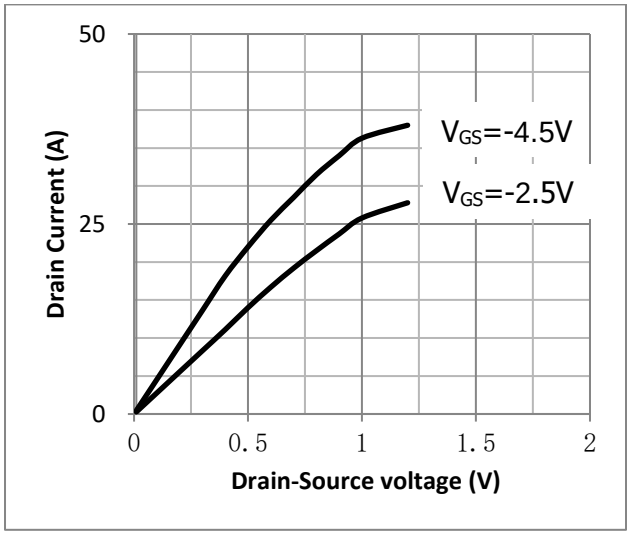


Fig.3 Threshold Voltage V.S Junction Temperature

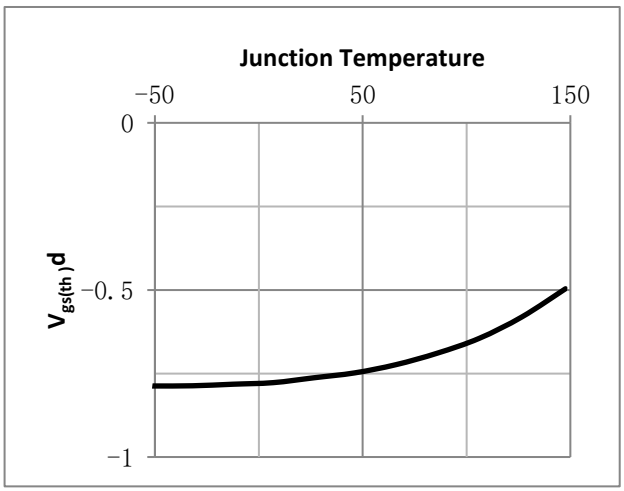


Fig.4 Resistance V.S Drain Current

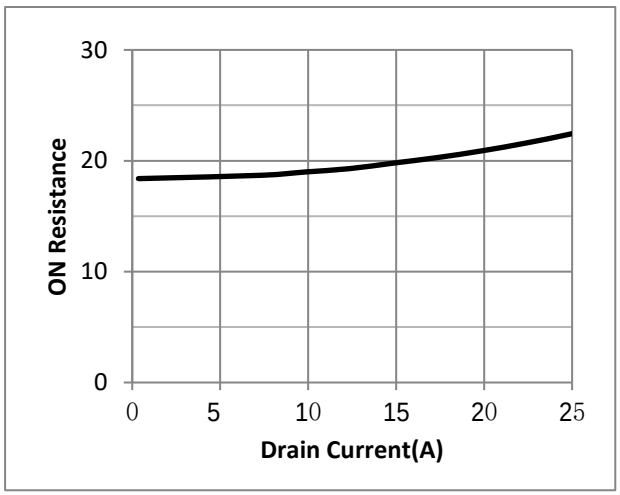


Fig.5 On-Resistance VS Gate Source Voltage

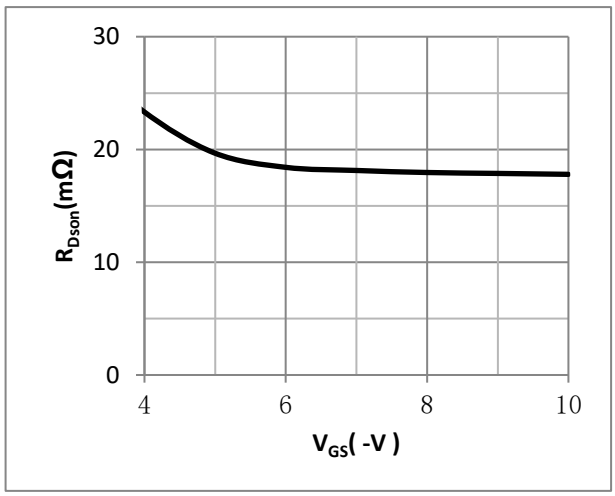


Fig.6 On-Resistance V.S Junction Temperature

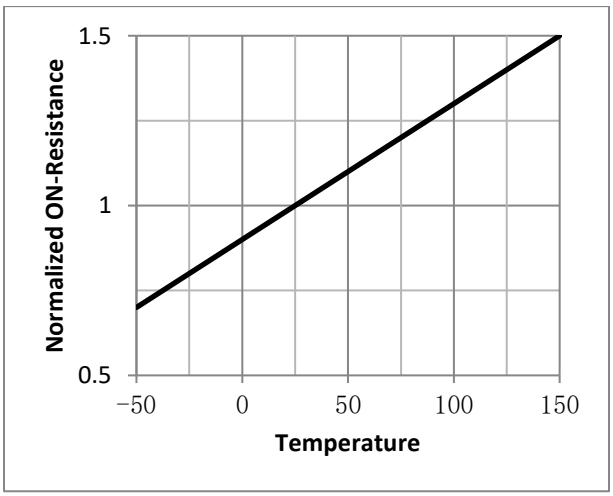


Fig.7 Switching Time Measurement Circuit

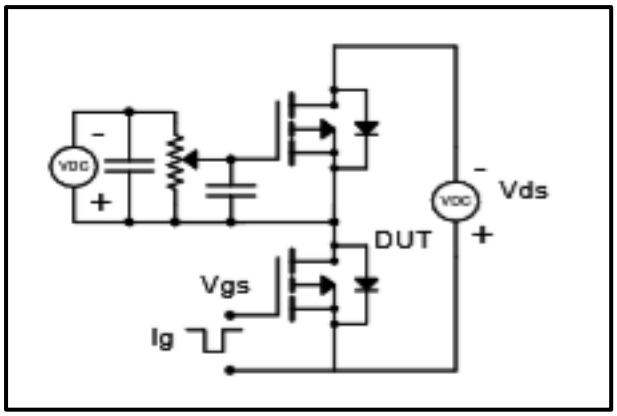


Fig.8 Gate Charge Waveform

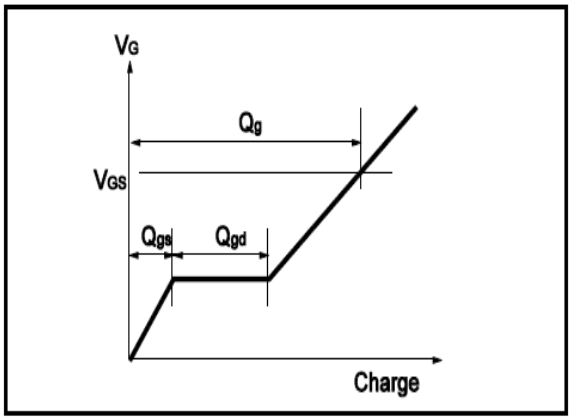


Fig.9 Switching Time Measurement Circuit

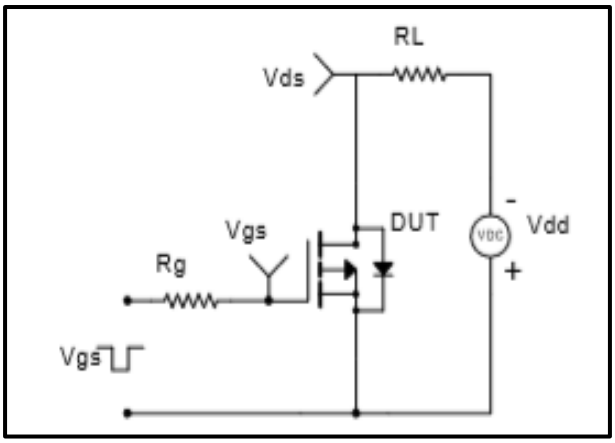


Fig.10 Gate Charge Waveform

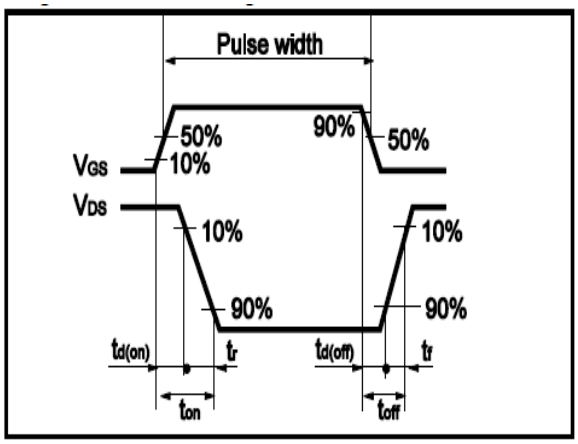


Fig.11 Avalanche Measurement Circuit

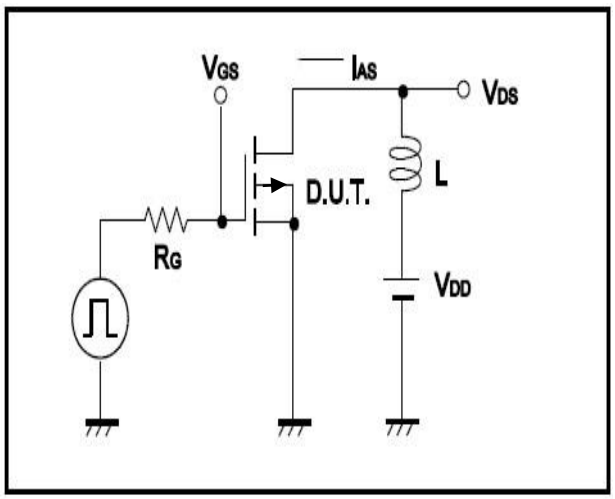
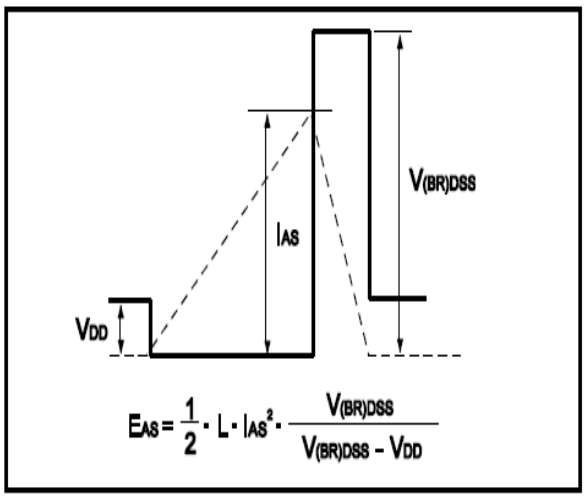
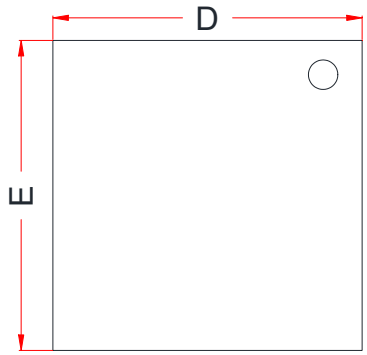


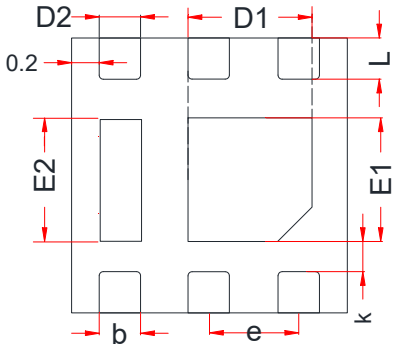
Fig.12 Avalanche Waveform



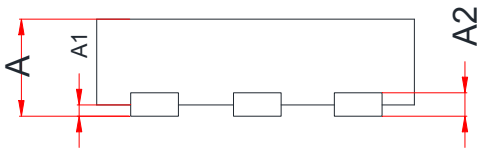
DFN2X2-6L Package Information



TOP VIEW



BOTTOM VIEW



SIDE VIEW

Symbol	Dimensions in Millimeters		
	Min.	Typ.	Max.
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2		0.203Ref.	
b	0.25	0.30	0.35
D	1.92	2.00	2.07
D1	0.85	0.95	1.05
D2	0.20	0.30	0.40
E	1.92	2.00	2.07
E1	0.70	0.80	0.90
E2	0.70	0.80	0.90
e		0.65 BSC	
L	0.30	0.35	0.40
K	0.20	-	-