● General Description

The ZM280N06I combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

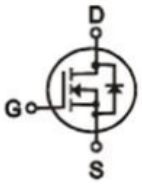
● Features

- ■ 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}=60V

$R_{DS(ON)}$ =28mΩ

I_D=25A

TO-251

●Ordering Information:

Part NO.	ZM280N06I
Marking	ZM280N06
Packing Information	REEL TAPE
Basic ordering unit (pcs)	900

●Absolute Maximum Ratings (T_C =25℃)

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_{D@}$TC=25℃	25	A
	$I_{D@}$TC=75℃	19	A
	$I_{D@}$TC=100℃	15.75	A
Pulsed Drain Current ①	I_{DM}	75	A
Total Power Dissipation	P_D@TC=25℃	50	W
Total Power Dissipation	P_D@TA=25℃	1.25	W
Operating Junction Temperature	T_J	-55 to 150	℃
Storage Temperature	T_{STG}	-55 to 150	℃
Single Pulse Avalanche Energy	E_{AS}	75	mJ

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	2.4	° C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	65	° 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	60			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	1.2	1.8	2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=60V, V_{GS} =0V			1.0	uA
Gate- Source Leakage Current	I_{GSS}	V_{GS}=±20V ,V_{DS} =0V			±100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=12A		26	34	mΩ
		V_{GS}=4.5V, I_D=6A		31	40	mΩ
Forward Transconductance	g_{FS}	V_{DS} =25V, I_D=10A		5		s
Source-drain voltage	V_{SD}	Is=12A			1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	f = 1MHz	-	1430	-	pF
Output capacitance	C_{oss}		-	160	-	
Reverse transfer capacitance	C_{rss}		-	115	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	V_{DD} = 25V	-	25	-	nC
Gate - Source charge	Q_{gs}	I_D = 5A	-	4	-	
Gate - Drain charge	Q_{gd}	V_{GS} = 10V	-	9	-	

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

Fig.1 Maximum Continuous Drain Current

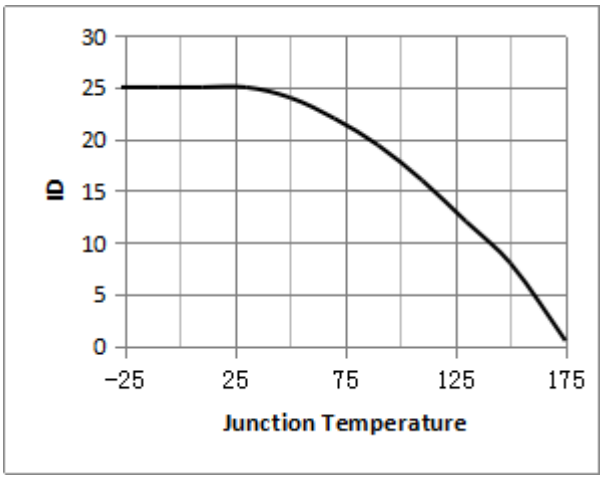


Fig.2 Typical output Characteristics

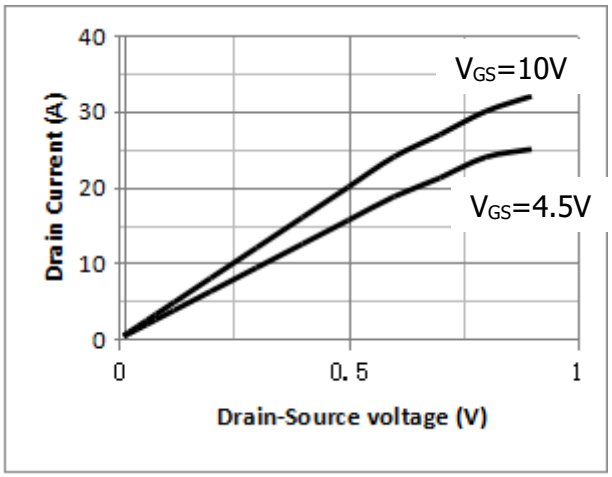


Fig.3 Threshold Voltage V.S Junction Temperature

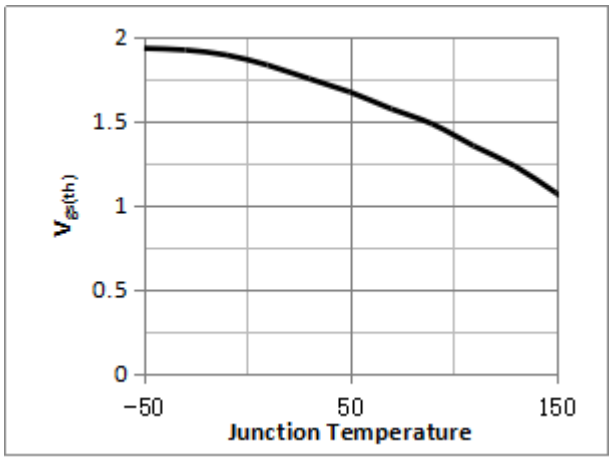


Fig.4 Resistance V.S Drain Current

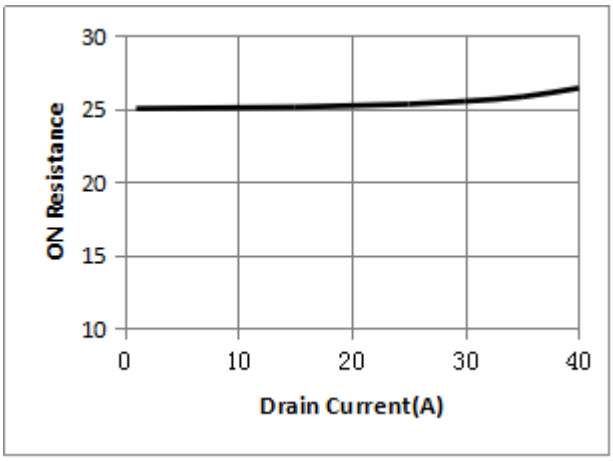


Fig.5 On-Resistance VS Gate Source Voltage

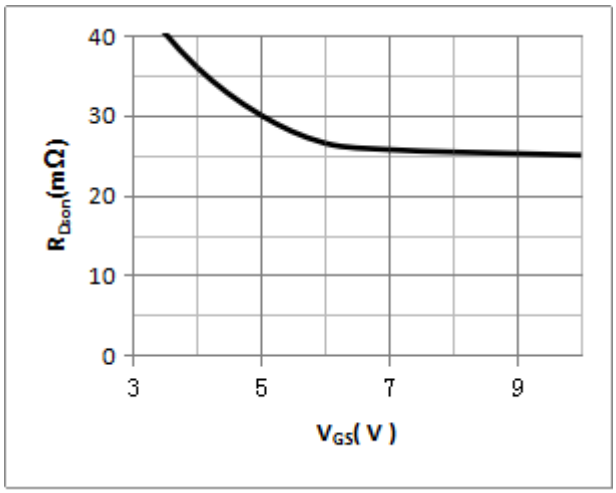


Fig.6 On-Resistance V.S Junction Temperature

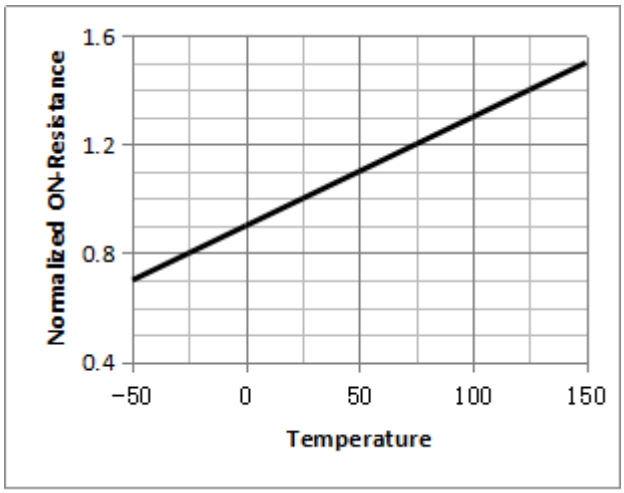


Fig.7 Switching Time Measurement Circuit

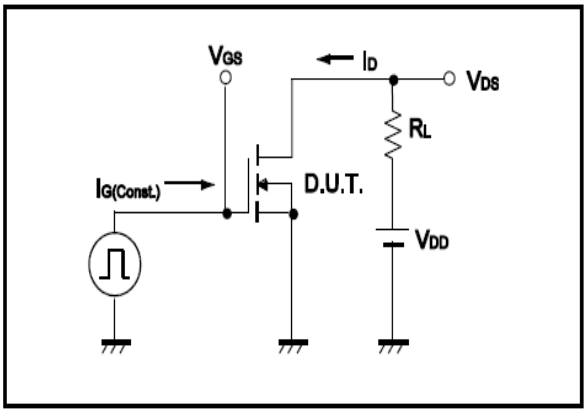


Fig.8 Gate Charge Waveform

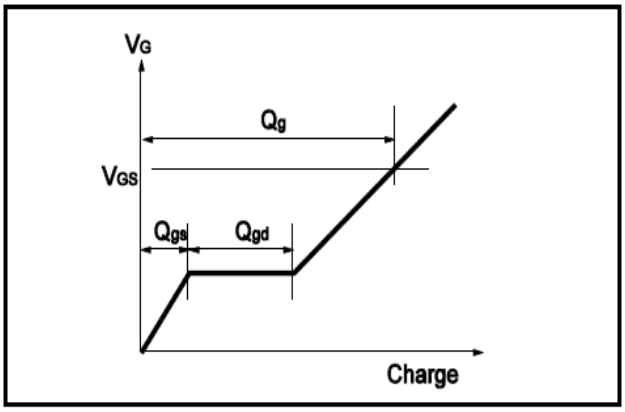


Fig.9 Switching Time Measurement Circuit

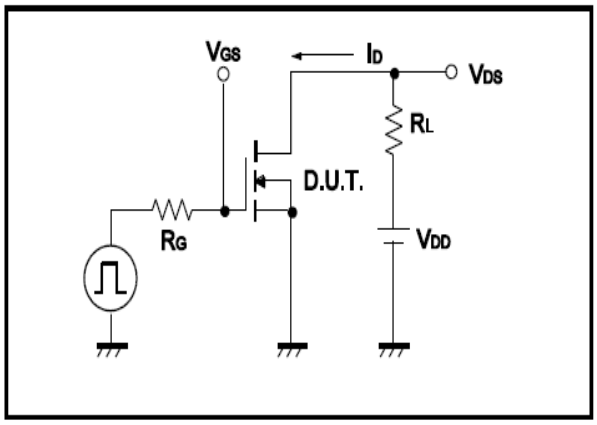


Fig.10 Gate Charge Waveform

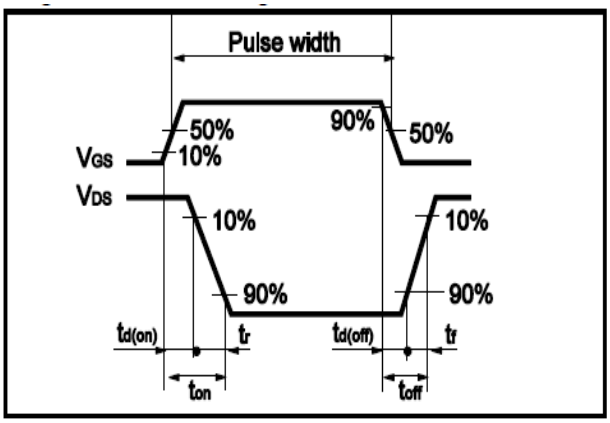


Fig.11 Avalanche Measurement Circuit

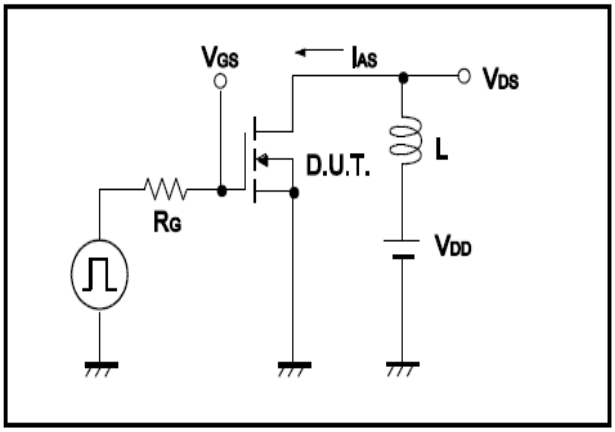
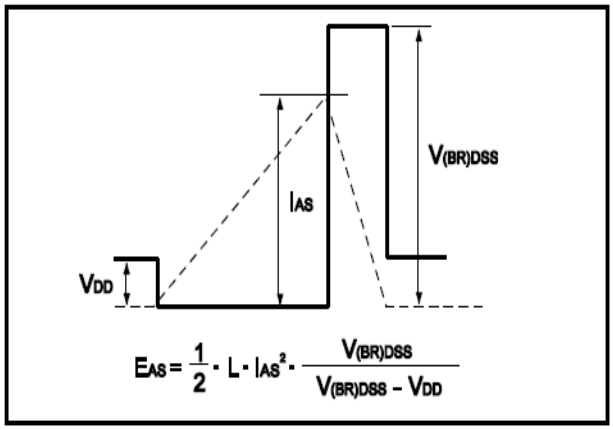


Fig.12 Avalanche Waveform



●Dimensions(TO-251)

Unit：mm

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	D	6.35	6.80
A1	0.95	1.30	D1	5.10	5.50
B	0.80	1.25	E	5.30	6.30
b	0.50	0.80	e	2.24	2.35
b1	0.70	0.90	E1	4.43	4.73
c	0.45	0.60	L	7.00	9.40
c1	0.45	0.60