

• General Description

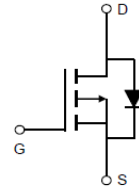
It combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.

• Features

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

• Application

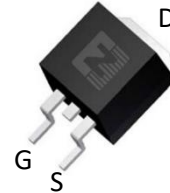
- BLDC Motor driver
- Load Switch
- DC-DC

• Product Summary


$V_{DS} = -60V$

$R_{DS(ON)} = 8m\Omega$

$I_D = -110A$



TO-263

• Ordering Information:

Part NO.	ZM080P06B
Marking	ZM080P06
Packing Information	REEL TAPE
Basic ordering unit (pcs)	800

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

Parameter	Symbol	Conditions	Rating	Unit
Drain-Source Voltage	V_{DS}	$25^\circ C \leq T_j \leq 150^\circ C$	-60	V
Gate-Source Voltage	$V_{GS}^{①}$		+20/-20	V
Continuous Drain Current	I_D	$T_C = 25^\circ C$	-110	A
	I_D	$T_C = 75^\circ C$	-98	A
	I_D	$T_C = 100^\circ C$	-78	A
Pulsed Drain Current	I_{DM}	pulsed; $t_p \leq 10 \mu s$; $T_{mb} = 25^\circ C$;	-330	A
Total Power Dissipation	P_D	$T_C = 25^\circ C$	115	W
Total Power Dissipation	P_D	$T_A = 25^\circ C$	3.3	W
Operating Junction Temperature	T_J		-55 to 150	$^\circ C$
Storage Temperature	T_{STG}		-55 to 150	$^\circ C$
Single Pulse Avalanche Energy	E_{AS}	$L = 0.1mH$, $V_{GS} = 10V$, $R_g = 25\Omega$, $T_J = 25$	210	mJ
ESD Level (HBM)			Class 2	

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	1.3	$^{\circ}C/W$
Thermal resistance, junction - ambient [®]	R_{thJA}	-	-	45	$^{\circ}C/W$
Soldering temperature	T_{sold}	-	-	260	$^{\circ}C$

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A$	-60			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.3	-1.8	-2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V$			-1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS}=-10V, I_D=-20A$		8	10.5	$m\Omega$
		$V_{GS}=-4.5V, I_D=-16A$ [®]		10	14	$m\Omega$
Forward Transconductance	g_{FS}	$V_{DS}=-10V, I_D=-10A$		32		s
Source-drain voltage	V_{SD}	$I_S=-20A$			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Resistance	R_g	$f = 1MHz$	-	3.1	-	Ω
Input capacitance	C_{iss}	$f = 1MHz$ $V_{DS}=-25V$	-	10440	-	pF
Output capacitance	C_{oss}		-	412	-	
Reverse transfer capacitance	C_{rss}		-	325	-	

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

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD}=-25V$	-	158	-	nC
Gate - Source charge	Q_{gs}	$I_D=-10A$	-	26	-	
Gate - Drain charge	Q_{gd}	$V_{GS}=-10V$	-	27	-	

Fig.1 Gate-Charge Characteristics

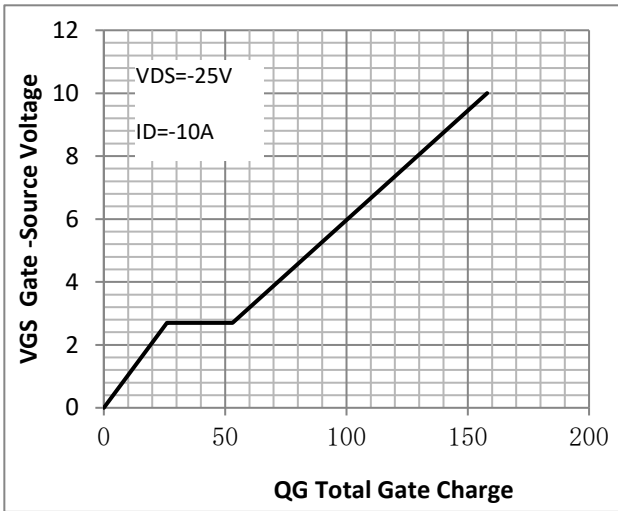


Fig.2 Capacitance Characteristics

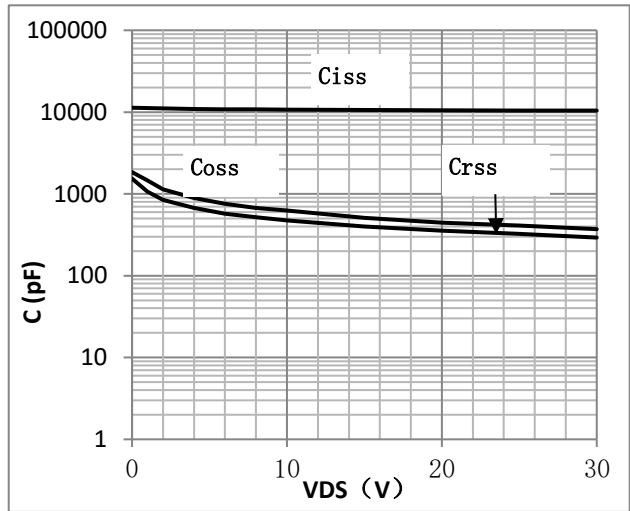


Fig.3 Power Dissipation

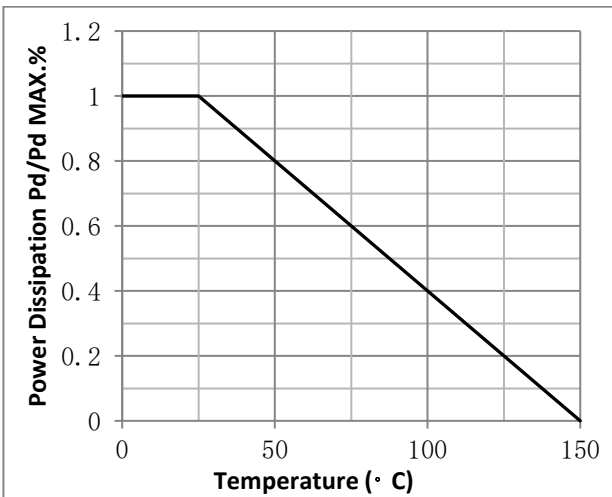


Fig.4 Typical output Characteristics

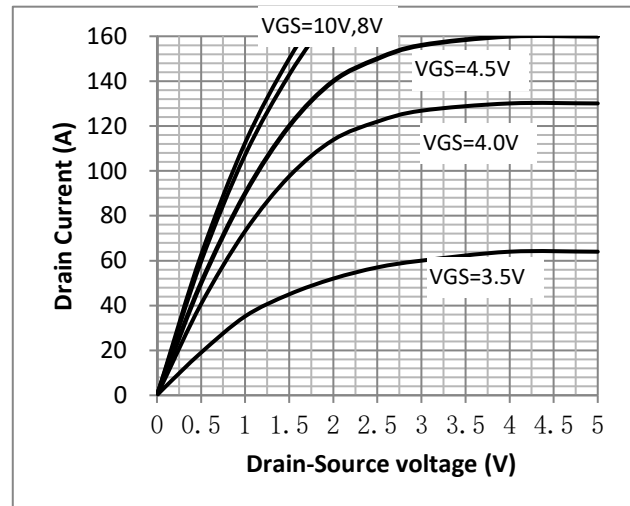


Fig.5 Threshold Voltage V.S Junction Temperature

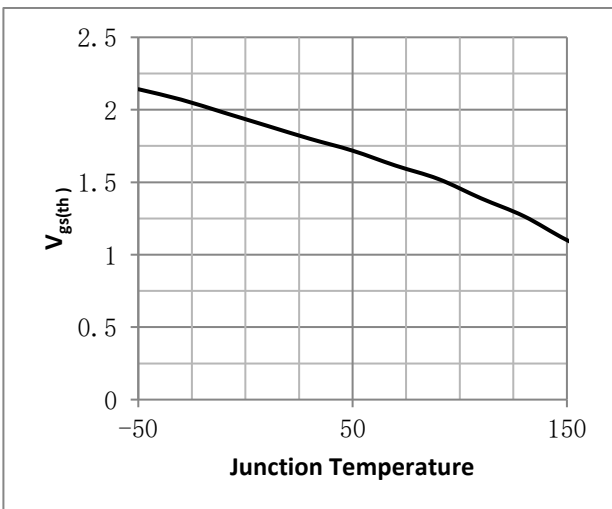


Fig.6 Resistance V.S Drain Current

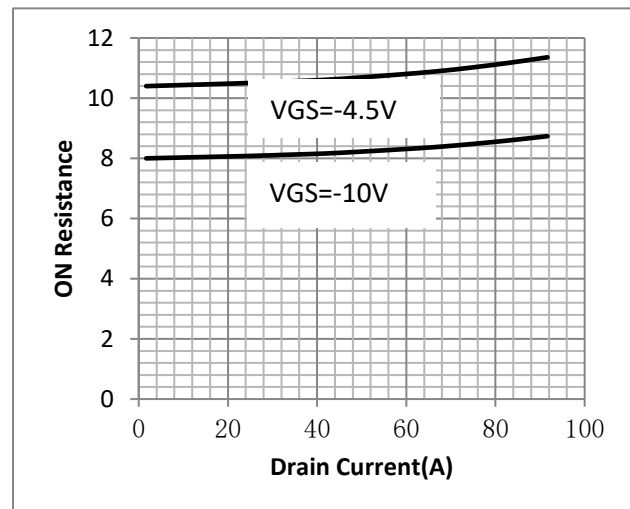


Fig.7 On-Resistance VS Gate Source Voltage

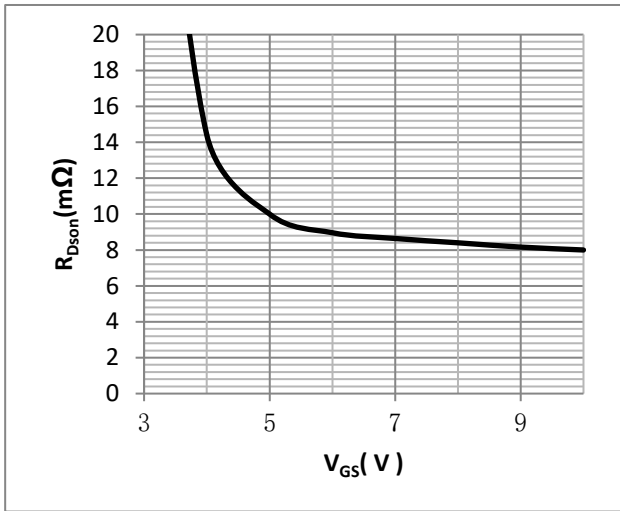


Fig.8 On-Resistance V.S Junction Temperature

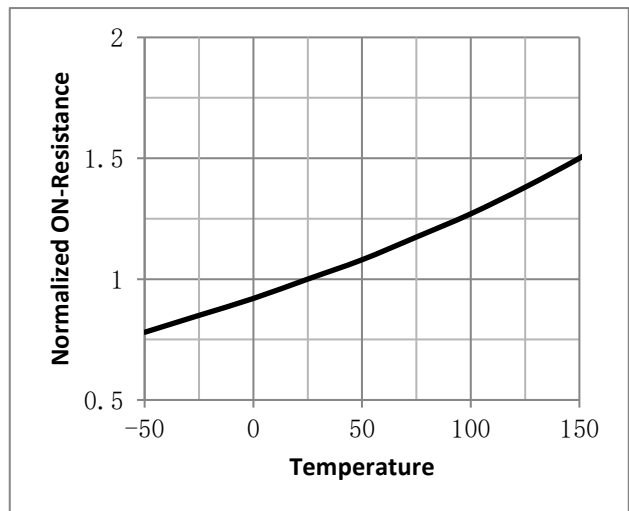


Figure.9 Transfer Characteristics

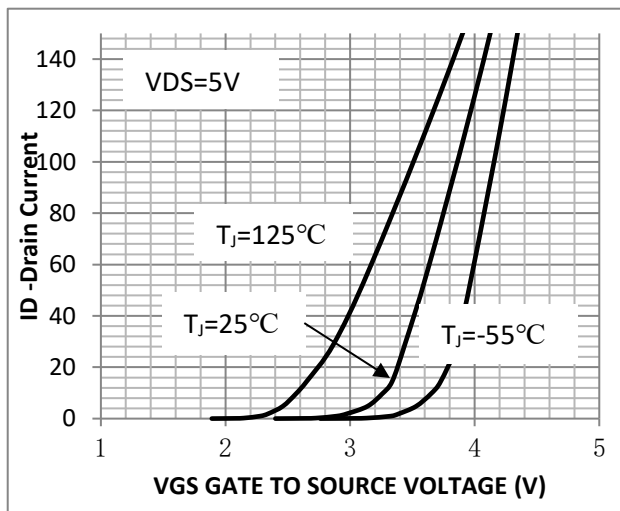


Figure.10 Diode Forward Voltage vs. Current

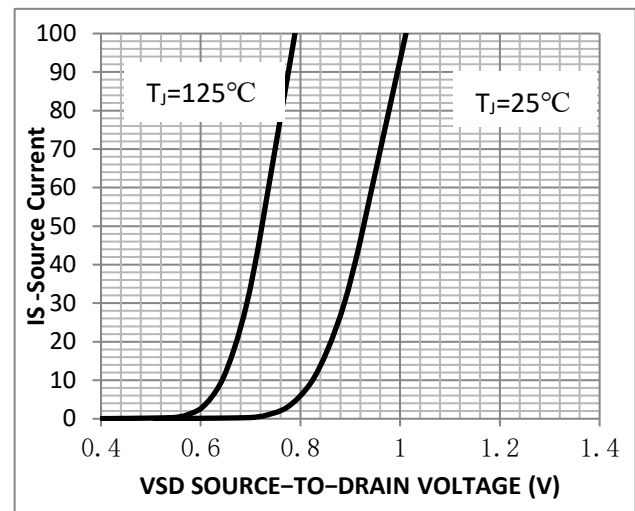


Fig.11 SOA Maximum Safe Operating Area

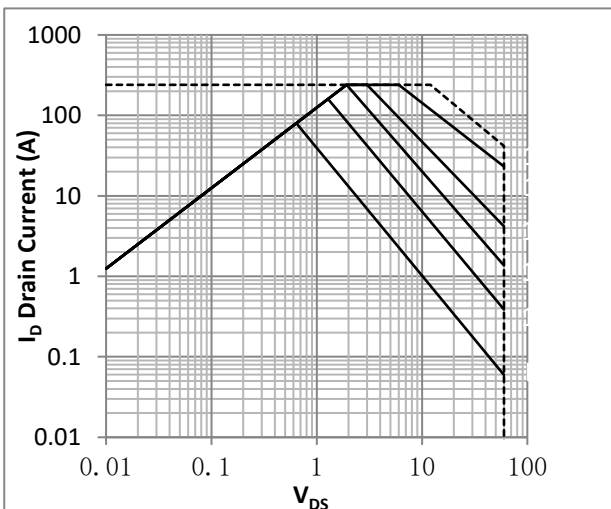


Fig.12 ID-Junction Temperature

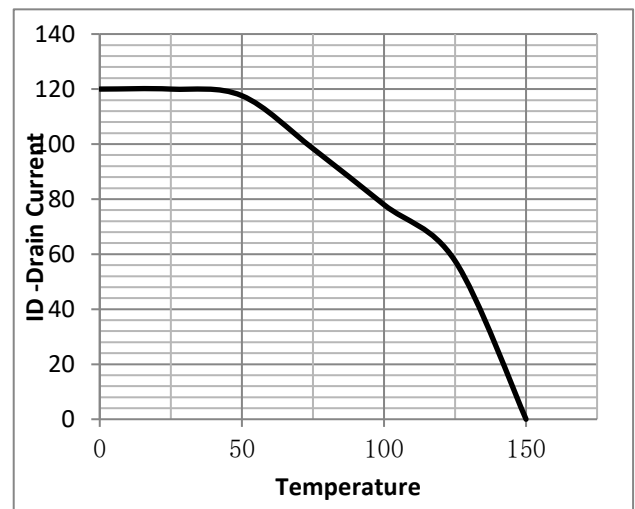


Fig.13 Gate Charge Measurement Circuit

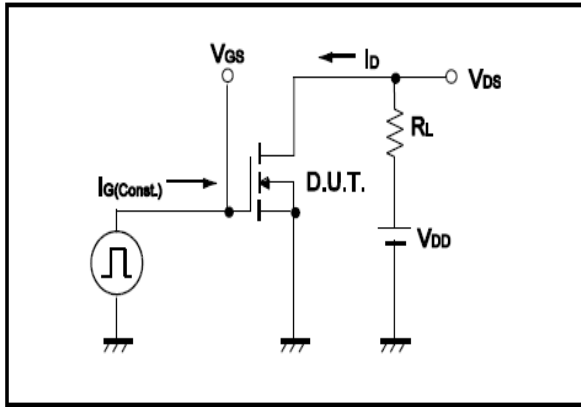


Fig.14 Gate Charge Waveform

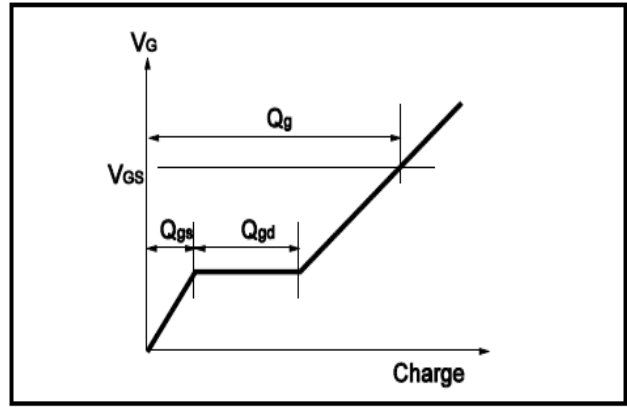


Fig.15 Switching Time Measurement Circuit

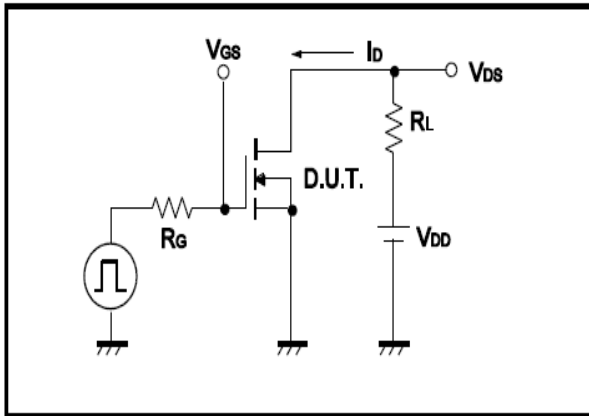


Fig.16 Switching Time Waveform

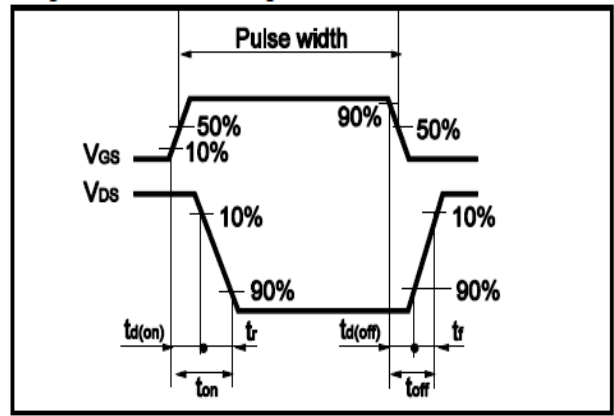


Fig.17 Avalanche Measurement Circuit

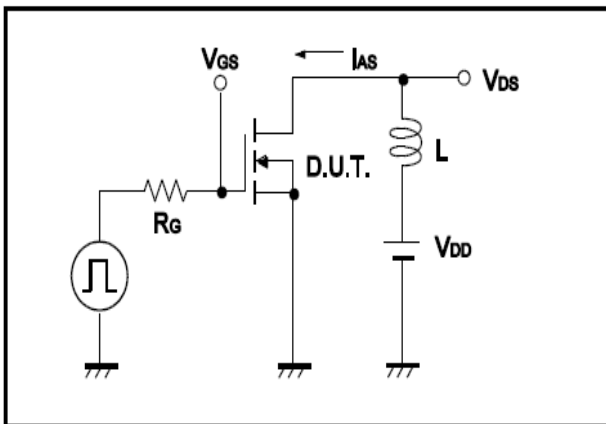
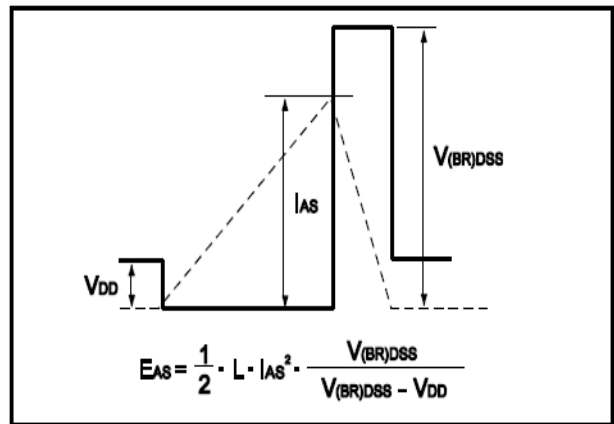


Fig.18 Avalanche Waveform

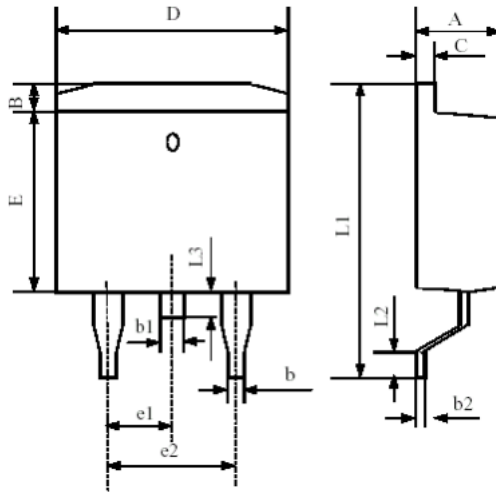




• Dimensions (TO-263)

Unit: mm

SYMBOL	MIN	TYP	MAX	SYMBOL	MIN	TYP	MAX
A	4.42		4.72	E	8.99		9.29
B	1.22		1.32	e1	2.44		2.64
b	0.76		0.86	e2	4.98		5.18
b1	1.22		1.32	L1	15.19		15.79
b2	0.33		0.43	L2	2.29		2.79
C	1.22		1.32	L3	1.3		1.75
D	9.95		10.25				





Note:

- ① Pulse : VGS=+20V/-20V, Duty cycle=50%,Tj=175°C, t=1000 hours; For DC , the following test conditions can be passed: VGS=+20V/-10V, Tj=175°C, t=1000 hours;
- ② Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate;
- ③ Vgs≥4.5V is required for practical application.

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