

General Description

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

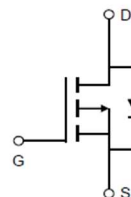
Features

- 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

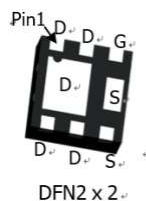
Product Summary



$$V_{DS} = -30V$$

$$R_{DS(ON)} = 27m\Omega$$

$$I_D = -8.4A$$



Ordering Information:

Part NO.	ZM270P03L
Marking	270P03
Packing Information	REEL TAPE
Basic ordering unit (pcs)	4000

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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25^\circ C}$	-8.4	A
	$I_{D@TC=75^\circ C}$	-6.4	A
	$I_{D@TC=100^\circ C}$	-5.3	A
Pulsed Drain Current ^①	I_{DM}	-25	A
Diode continuous forward current	I_S	-8.4	A
Total Power Dissipation ^②	P_D	5	W
Total Power Dissipation	$P_{D@TA=25^\circ C}$	0.7	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}	30	mJ

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case ^②	R_{thJC}	-	-	25	° 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}	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = -250\mu A$	-1		-2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -8A$		27	45	m Ω
		$V_{GS} = -4.5V, I_D = -6A$		39	60	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = -10V, I_D = -2A$		9		S
Source-drain voltage	V_{SD}	$I_S = -8A$			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$V_{DS} = -25V$ $f = 1MHz$	-	850	-	pF
Output capacitance	C_{oss}		-	125	-	
Reverse transfer capacitance	C_{rss}		-	115	-	

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

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD} = -15V$ $I_D = -8A$ $V_{GS} = -10V$	-	16.5	-	nC
Gate - Source charge	Q_{gs}		-	3.1	-	
Gate - Drain charge	Q_{gd}		-	2.5	-	

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

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

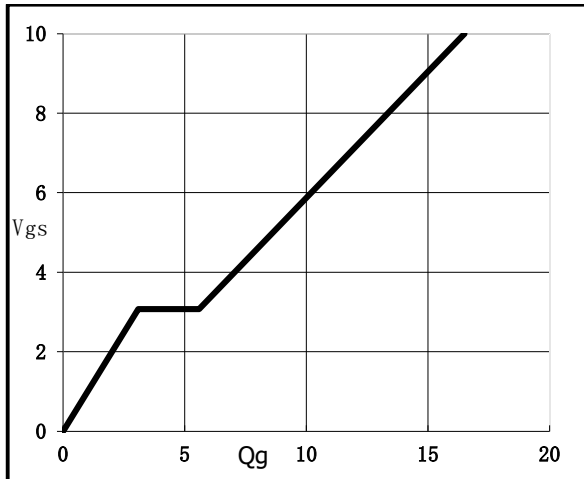


Fig.2 Capacitance Characteristics

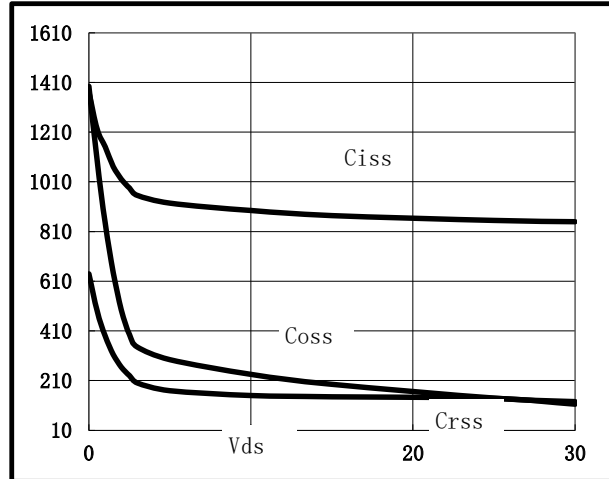


Fig.3 Power Dissipation Derating Curve

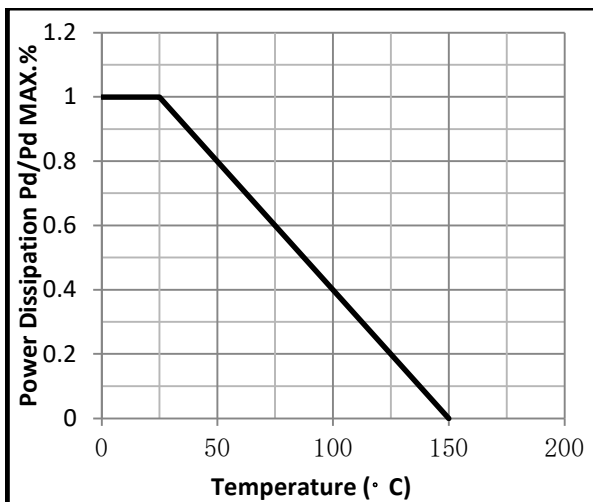


Fig.4 Typical output Characteristics

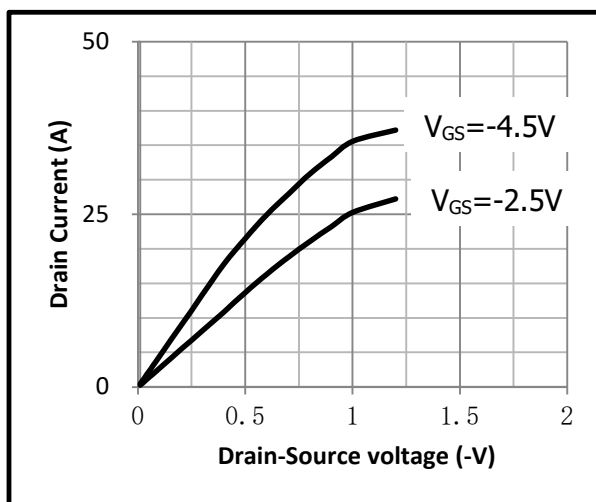


Fig.5 Threshold Voltage V.S Junction Temperature

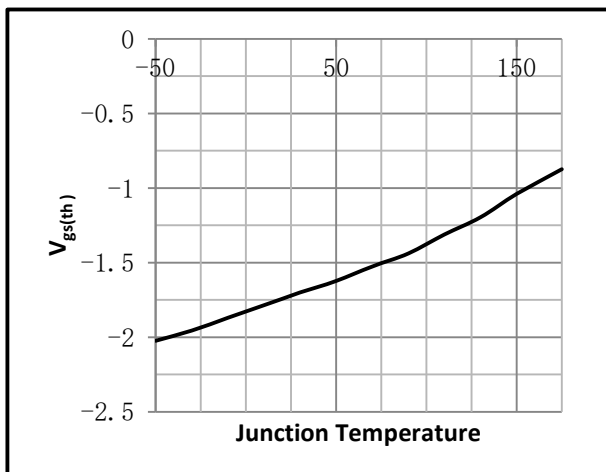


Fig.6 Resistance V.S Drain Current

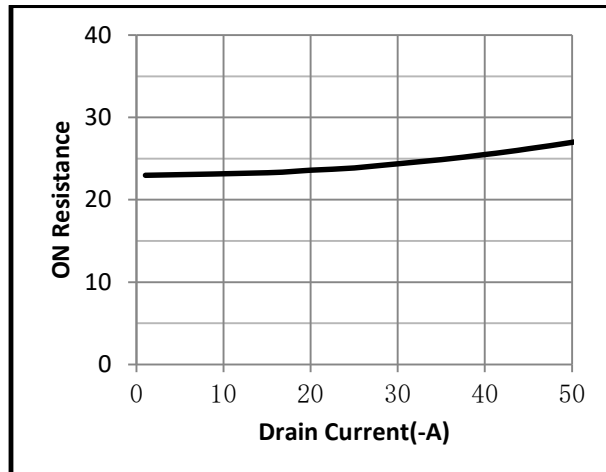


Fig.7 On-Resistance VS Gate Source Voltage

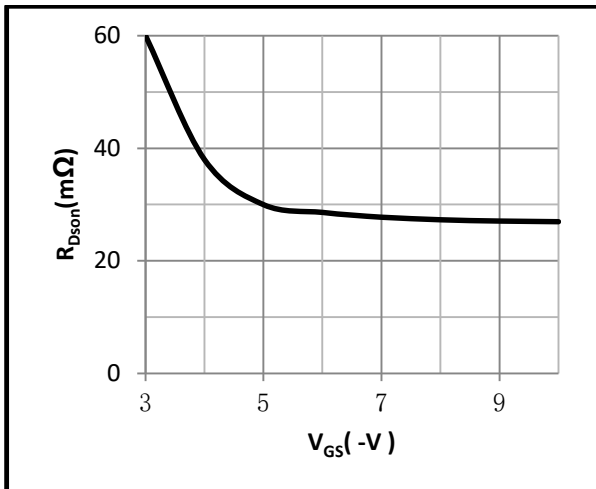


Fig.8 On-Resistance V.S Junction Temperature

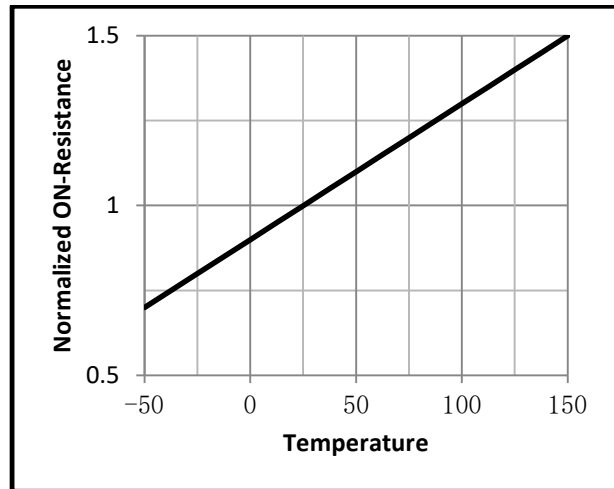


Fig.9 Maximum Forward Biased Safe Operating Area Fig.10 ID-Junction Temperature

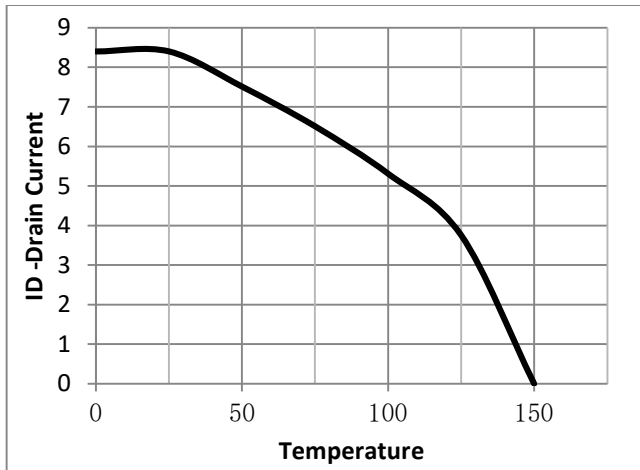
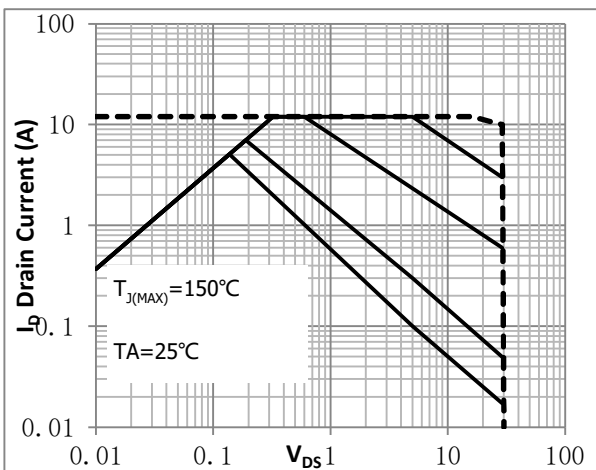


Fig.11 Gate Charge Measurement Circuit

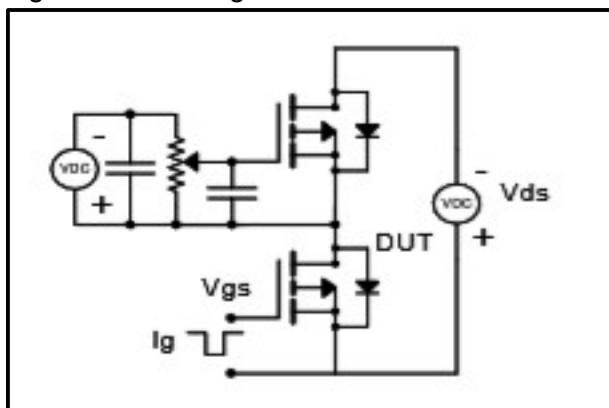


Fig.12 Gate Charge Waveform

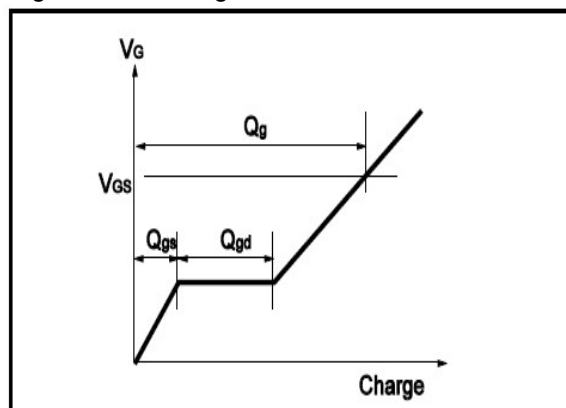


Fig.13 Switching Time Measurement Circuit

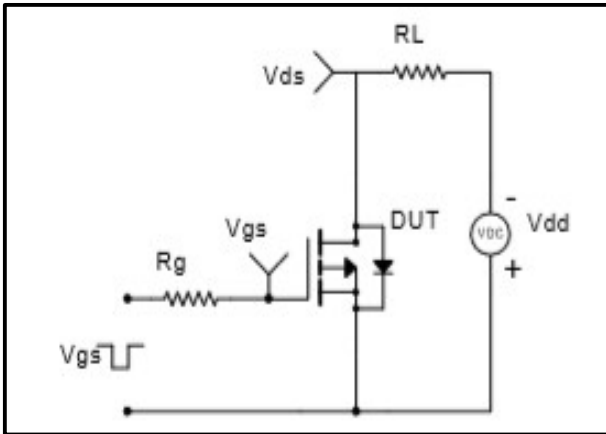


Fig.14 Switching Time Waveform

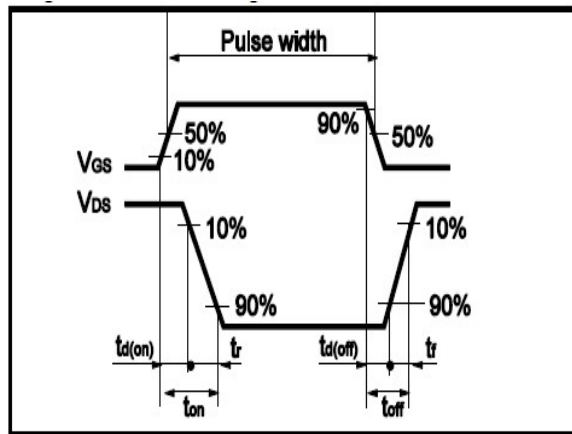


Fig.15 Avalanche Measurement Circuit

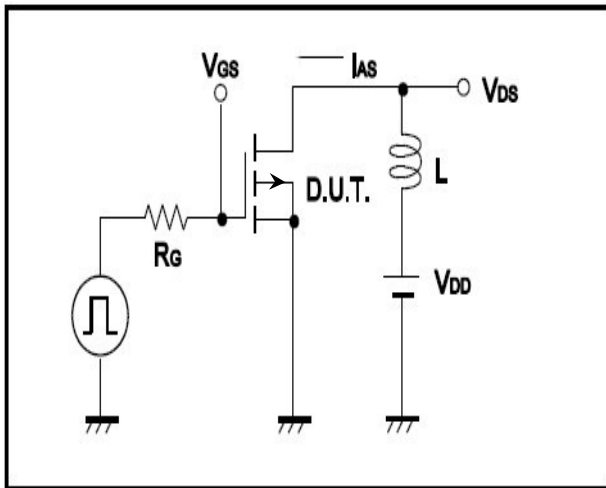
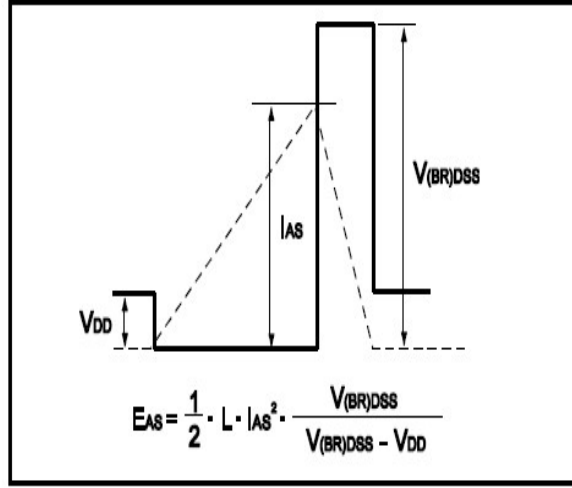
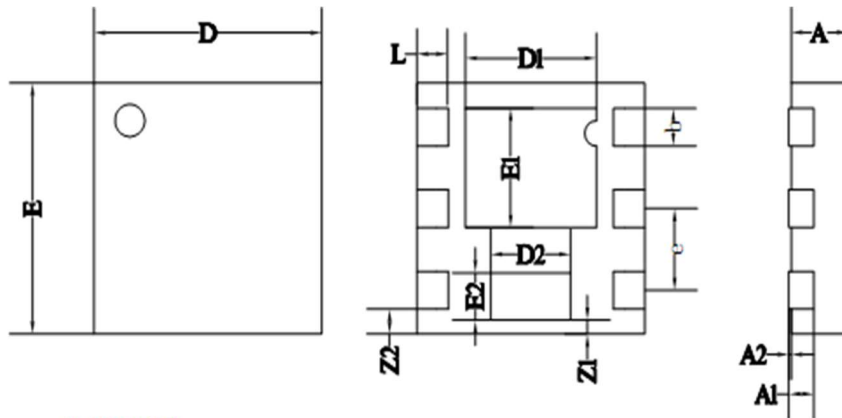


Fig.16vAvalanche Waveform



•Dimensions(DFN2*2)

Unit: mm



NOTE:
All dimensions are in mm

	MIN	NOM	MAX
D	1.95	2.00	2.05
E	1.95	2.00	2.05
D1	1.10	1.15	1.20
E1	0.90	0.95	1.00
D2	0.65	0.70	0.75
E2	0.33	0.38	0.43
L	0.225	0.275	0.325
b	0.25	0.30	0.35
e	0.65BSC		
A	0.45	0.50	0.55
A1	0.20REF		
A2	0.00	-	0.05
Z1	0.06	0.11	0.16
Z2	0.15	0.20	0.25