

• General Description

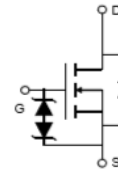
The ZM270P03U combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

• 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

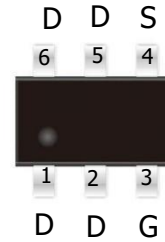
- Load Switch
- PWM Application

• Product Summary


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

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

$$I_D = -7A$$


SOT23-6
• Ordering Information:

Part NO.	ZM270P03U
Marking	270P03
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

• Absolute Maximum Ratings (T_C =25°C)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	$I_{D@TC=25^{\circ}C}$	-7	A
	$I_{D@TC=75^{\circ}C}$	-5.3	A
	$I_{D@TC=100^{\circ}C}$	-4.4	A
Pulsed Drain Current ^①	I_{DM}	-25	A
Total Power Dissipation ^②	P_D	12	W
Total Power Dissipation(TA=25°C)	$P_D@TA=25^{\circ}C$	0.75	W
Operating Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	°C

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case ^②	R _{thJC}	-	-	10	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	170	° 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	-30			V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} =V _{DS} , I _D =-250uA	-1		-2.5	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-30V, 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 =-7A		27	34	mΩ
		V _{GS} =-4.5V, I _D =-5A		40	48	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-10V, I _D =-1A		10		s
Source-drain voltage	V _{SD}	I _S =-7A			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz	-	895	-	pF
Output capacitance	C _{oss}		-	160	-	
Reverse transfer capacitance	C _{rss}		-	125	-	

•Gate Charge characteristics(T_a = 25°C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} =-10V	-	14		nC
Gate - Source charge	Q _{gs}	I _D =- 5A	-	6	-	
Gate - Drain charge	Q _{gd}	V _{GS} = -10V	-	5	-	

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

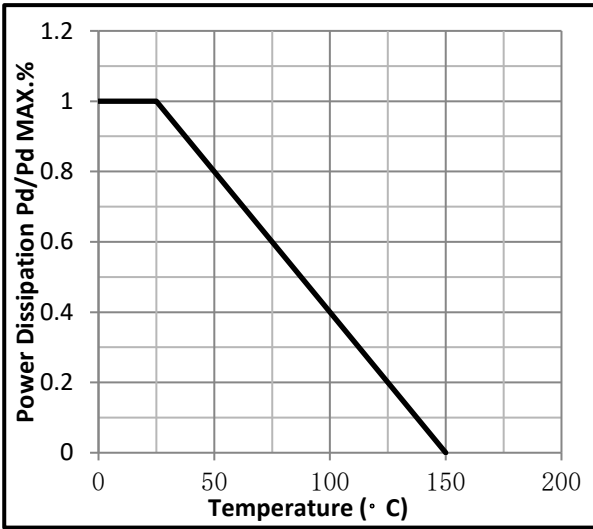


Fig.2 Typical output Characteristics

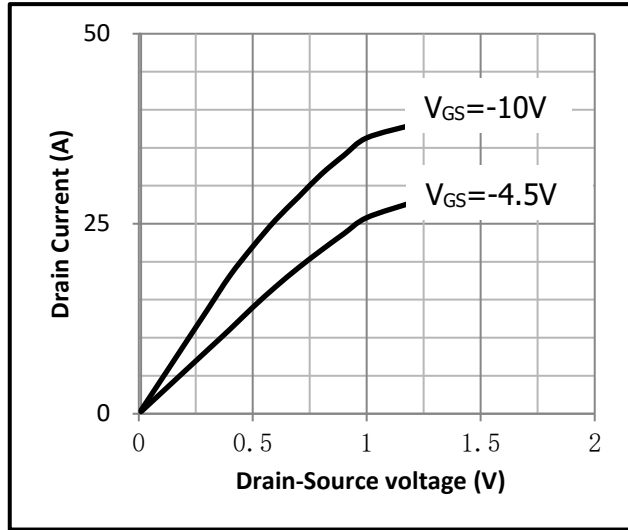


Fig.3 Threshold Voltage V.S Junction Temperature

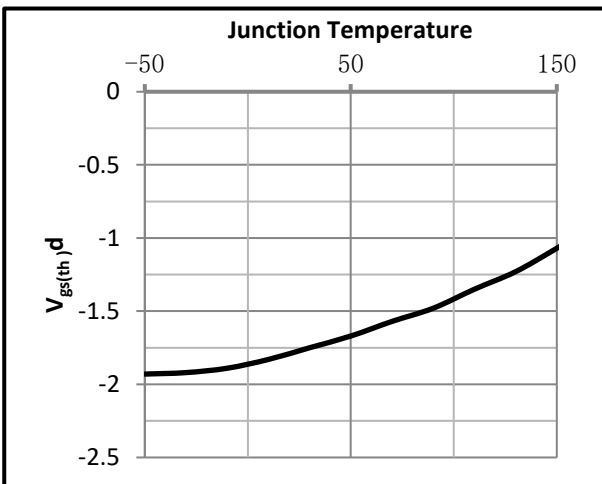


Fig.4 Resistance V.S Drain Current

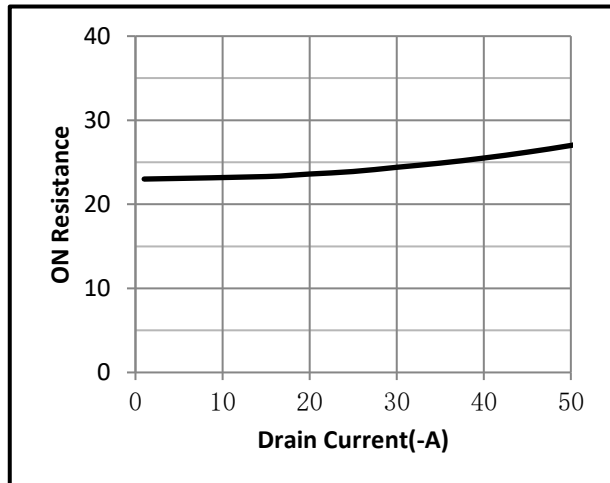


Fig.5 On-Resistance VS Gate Source Voltage

Fig.6 On-Resistance V.S Junction Temperature

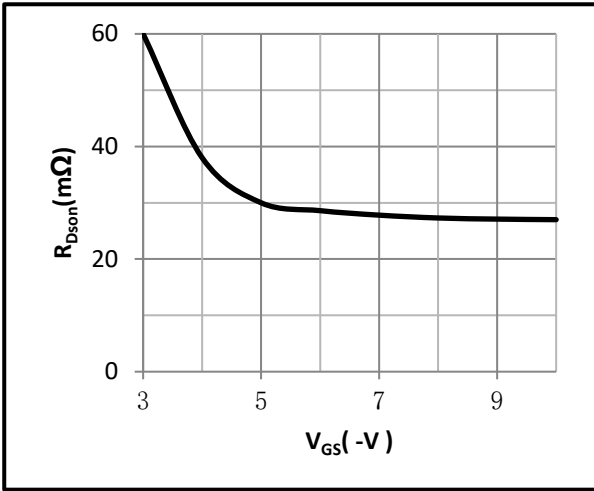


Fig.7 Switching Time Measurement Circuit

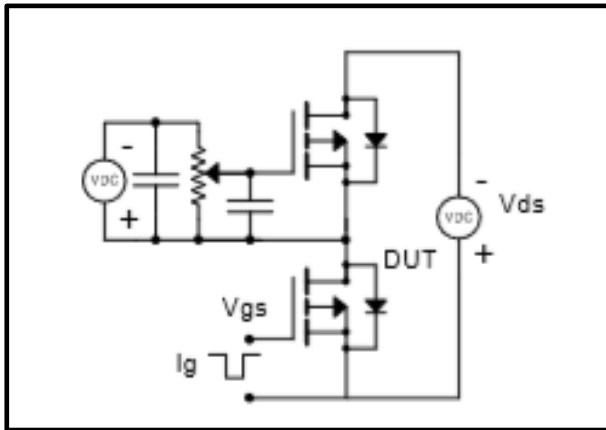


Fig.9 Switching Time Measurement Circuit

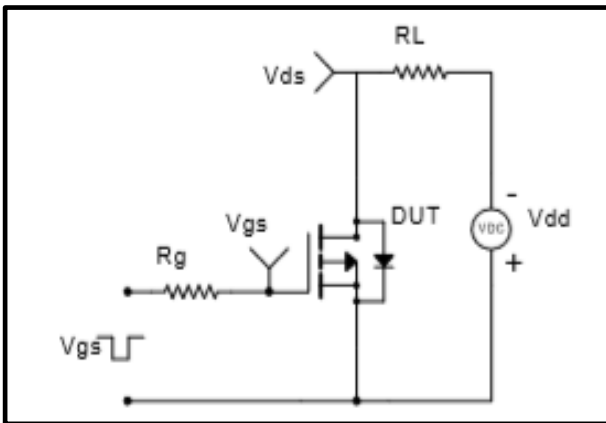


Fig.11 Avalanche Measurement Circuit

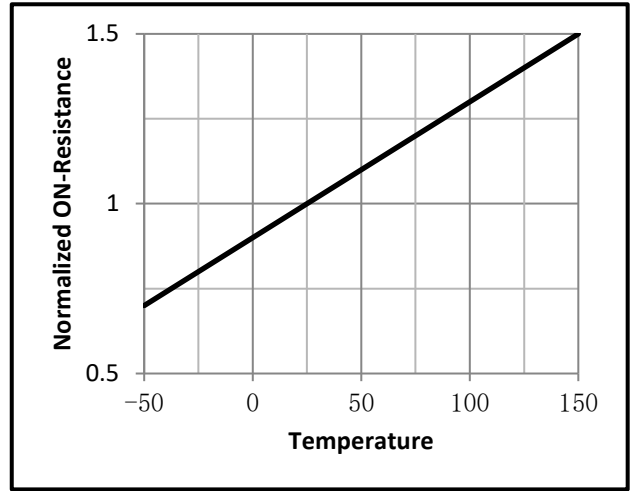
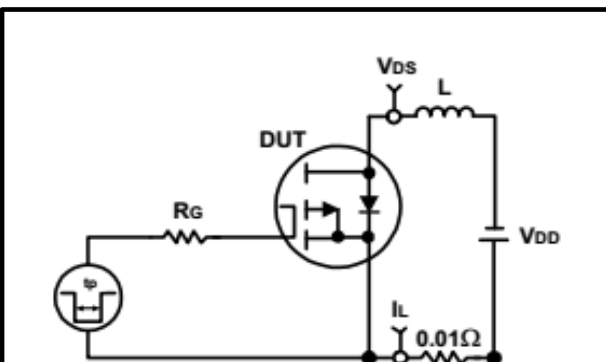


Fig.8 Gate Charge Waveform

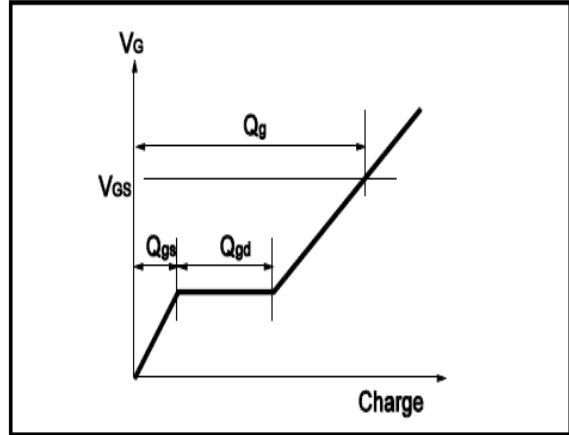


Fig.10 Gate Charge Waveform

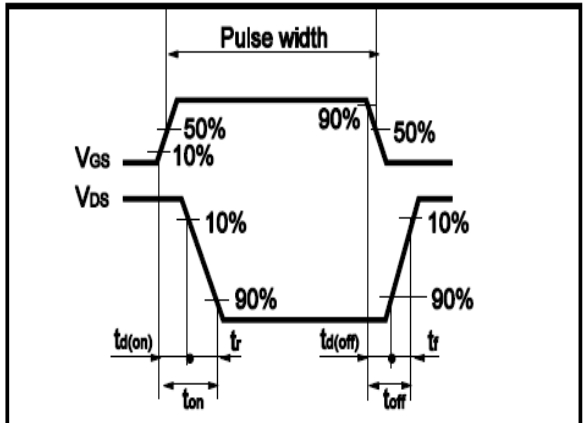
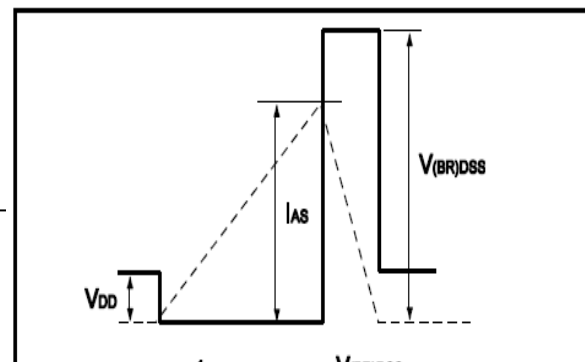


Fig.12 Avalanche Waveform



•Dimensions(SOT23-6)

Unit: mm

