

• General Description

The ZM140N10S 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 conduction loss
- Low Gate Charge for fast switching
- Low Thermal resistance And High Speed

• Application

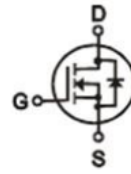
- Synchronous Rectification for AC-DC/DC-DC converter
- Oring switches
- Power Tools

• Ordering Information:

Part NO.	ZM140N10S
Marking	ZM140N10
Packing Information	REEL TAPE
Basic ordering unit (pcs)	4000

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

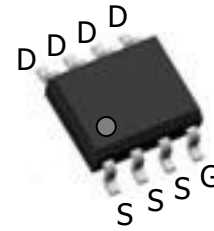
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_D @ T_C = 25^\circ\text{C}$	10	A
	$I_D @ T_C = 75^\circ\text{C}$	7.6	A
	$I_D @ T_C = 100^\circ\text{C}$	6.3	A
Pulsed Drain Current ①	I_{DM}	25	A
Total Power Dissipation	$P_D @ T_C = 25^\circ\text{C}$	70	W
Total Power Dissipation	$P_D @ T_A = 25^\circ\text{C}$	2.5	W
Operating Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$
Single Pulse Avalanche Energy @ $L = 0.1\text{mH}$	E_{AS}	80	mJ
Avalanche Current @ $L = 0.1\text{mH}$	I_{AS}	40	A

• Product Summary


$V_{DS} = 100\text{V}$

$R_{DS(ON)} = 14\text{m}\Omega$

$I_D = 10\text{A}$



SOP-8

•Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	1.7	$^{\circ}C/W$
Thermal resistance, junction - ambient	R_{thJA}	-	-	50	$^{\circ}C/W$
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	265	$^{\circ}C$

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 250\mu A$	100			V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{GS} = V_{DS}, I_D = 250\mu A$	1.2		2.5	V
Drain-Source Leakage Current	I_{DSS}	$V_{DS} = 100V, V_{GS} = 0V$			1.0	μA
Gate- Source Leakage Current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Static Drain-source On Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 10A$		14	16	m Ω
		$V_{GS} = 4.5V, I_D = 5A$		18	21	m Ω
Forward Transconductance	g_{FS}	$V_{DS} = 25V, I_D = 10A$		25		S
Source-drain voltage	V_{SD}	$I_S = 10A$			1.28	V

•Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	$f = 1MHz$	-	4300	-	pF
Output capacitance	C_{oss}		-	300	-	
Reverse transfer capacitance	C_{rss}		-	220	-	

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

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	$V_{DD} = 25V$	-	56	-	nC
Gate - Source charge	Q_{gs}	$I_D = 8A$	-	16	-	
Gate - Drain charge	Q_{gd}	$V_{GS} = 10V$	-	9	-	

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

Fig.1 Gate-Charge Characteristics

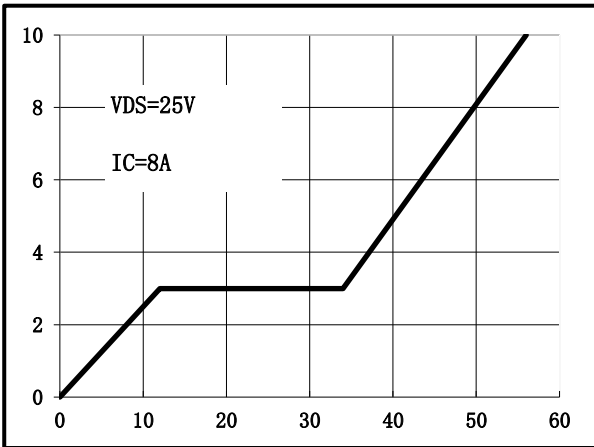


Fig.2 Capacitance Characteristics

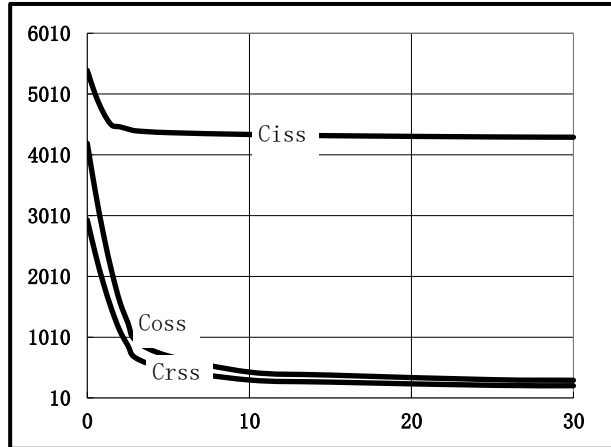


Fig.3 Power Dissipation

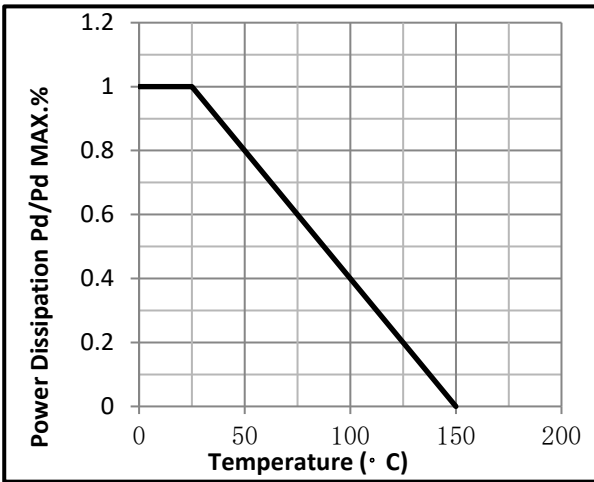


Fig.4 Typical output Characteristics

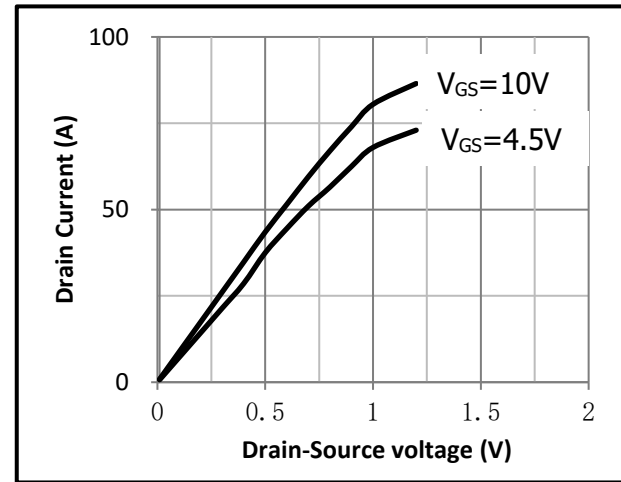


Fig.5 Threshold Voltage V.S Junction Temperature

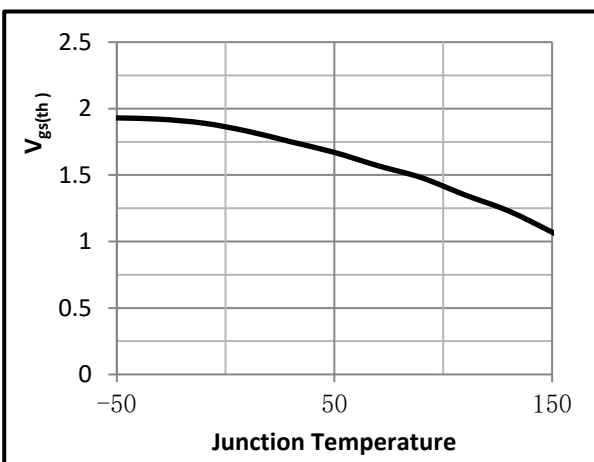


Fig.6 Resistance V.S Drain Current

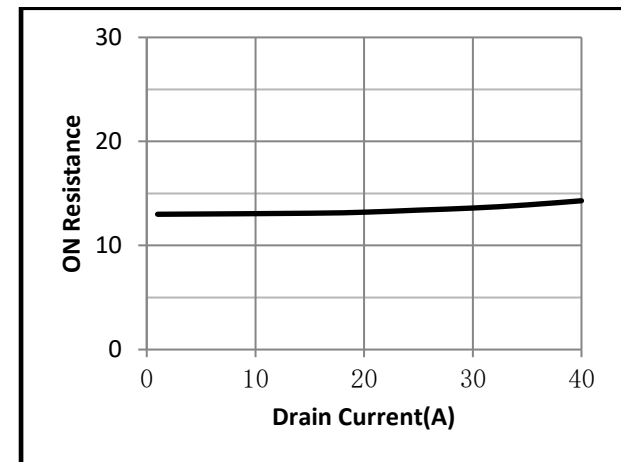


Fig.7 On-Resistance VS Gate Source Voltage

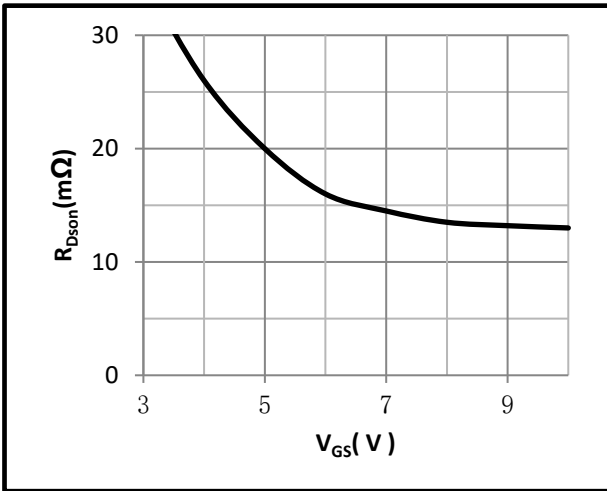


Fig.8 On-Resistance V.S Junction Temperature

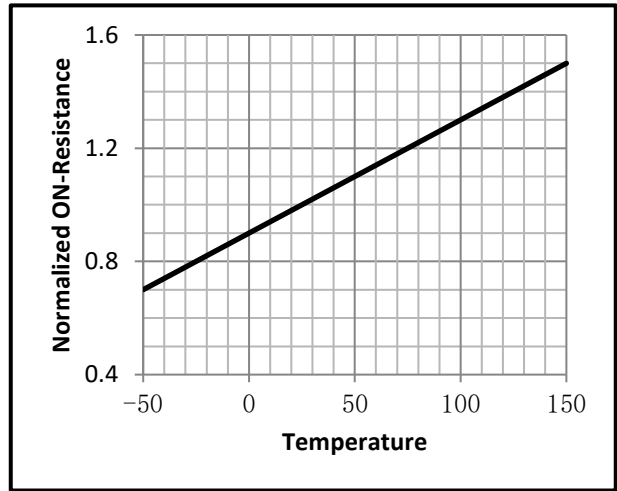


Fig.9 Switching Time Measurement Circuit

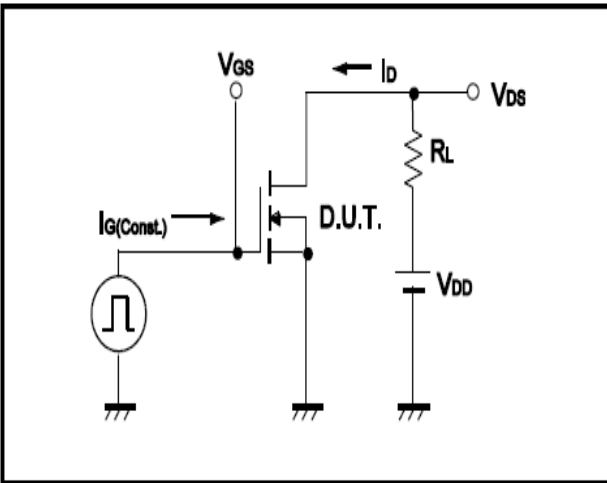


Fig.10 Gate Charge Waveform

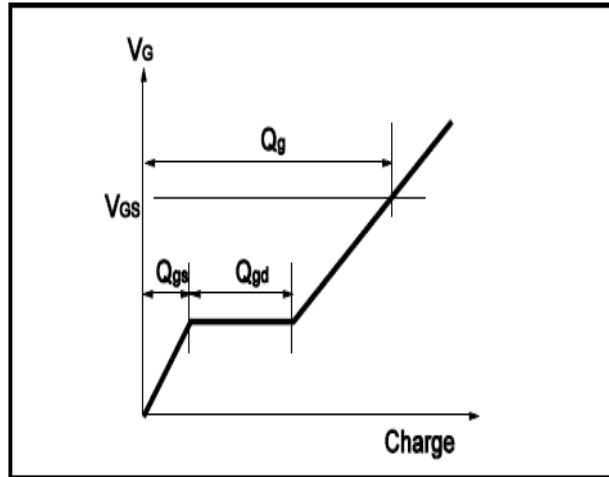


Fig.11 Switching Time Measurement Circuit

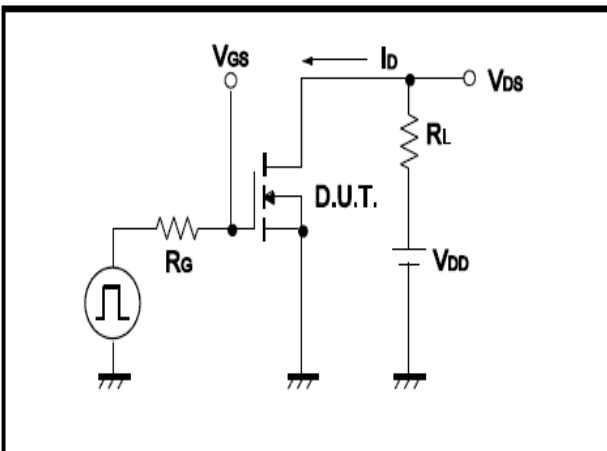
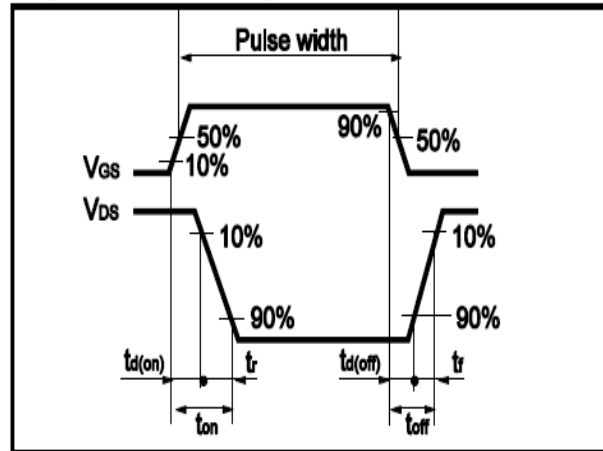


Fig.12 Gate Charge Waveform



•Dimensions(SOP8)

Unit: mm

SYMBOL	min	TYP	max	SYMBOL	min		max
A	4.80		5.00	C	1.30		1.50
A1	0.37		0.47	C1	0.55		0.75
A2		1.27		C2	0.55		0.65
A3		0.41		C3	0.05		0.20
B	5.80		6.20	C4	0.19	0.20	0.23
B1	3.80		4.00	D		1.05	
B2		5.00		D1	0.40		0.62

