



Product Summary

The ZM650N20HD combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$.



Trench technology

$R_{DS(ON)}$ to minimize conductive loss

fast switching



nd Synchronous Rectifier

$T_c = 25$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	$I_{D@TC=25}$	28	A
	$I_{D@TC=75}$	21	A
	$I_{D@TC=100}$	17.6	A
Pulsed Drain Current	I_{DM}	84	A
Total Power Dissipation($TC=25$)	$P_D@TC=25$	50	W
Total Power Dissipation($TA=25$)	$P_D@TA=25$	2.5	W
Operating Junction Temperature	T_J	-55 to 150	
Storage Temperature	T_{STG}	-55 to 150	

**Thermal resistance**

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R _{thJC}	-	-	2.5	° C/W
Thermal resistance, junction - ambient	R _{thJA}	-	-	50	° C/W
Soldering temperature, wavesoldering for 10s	T _{sold}	-	-	265	° C

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250uA	200			V
Gate Threshold Voltage	V _{GS(TH)}	V _{GS} = V _{DS} , I _D = 250uA	2.0		4.0	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} = 200V, 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		V _{GS} = 10V, I _D = 20A				
Forward Transconductance	g _{FS}	V _{DS} = 10V, I _D = 20A				

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C _{iss}	f = 1MHz	-	3150	-	pF
Output capacitance	C _{oss}		-	122	-	
Reverse transfer capacitance	C _{rss}		-	48	-	

Gate Charge characteristics (T_a = 25 °C)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q _g	V _{DD} = 25V	-	46	-	nC
Gate - Source charge	Q _{gs}	I _D = 8A	-	9.4	-	
Gate - Drain charge	Q _{gd}	V _{GS} = 10V	-	7.3	-	

Note: Pulse Test :

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Fig.7 Switching Time Measurement Circuit

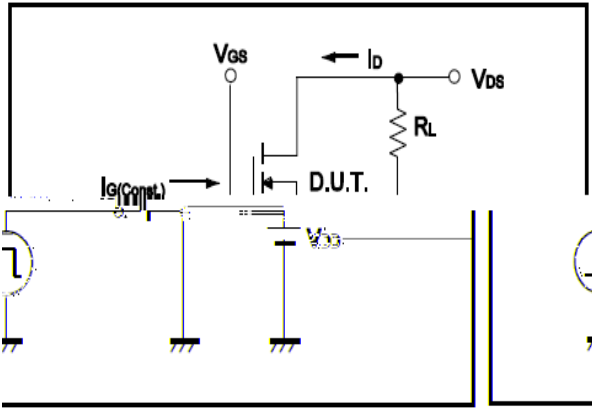


Fig.8 Gate Charge Waveform

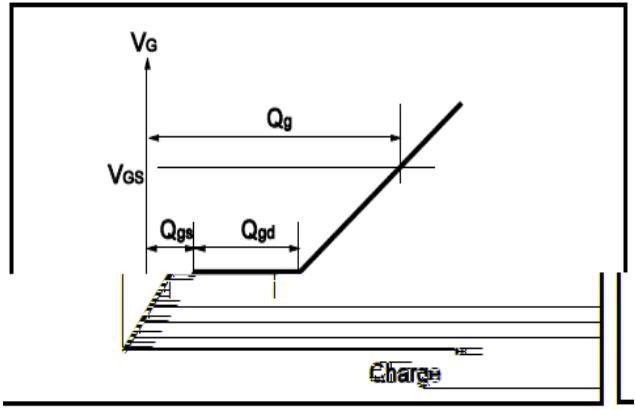


Fig.9 Switching Time Measurement Circuit

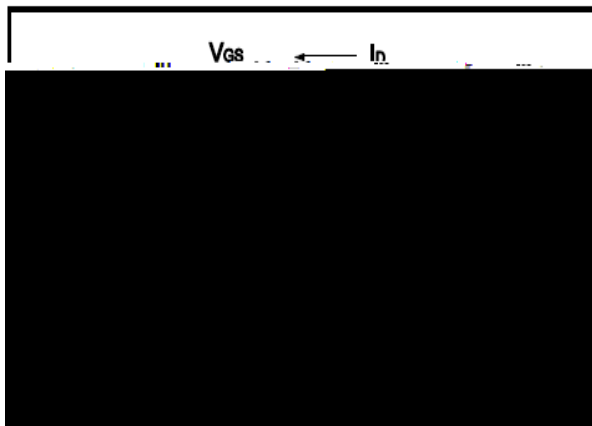


Fig.10 Gate Charge Waveform

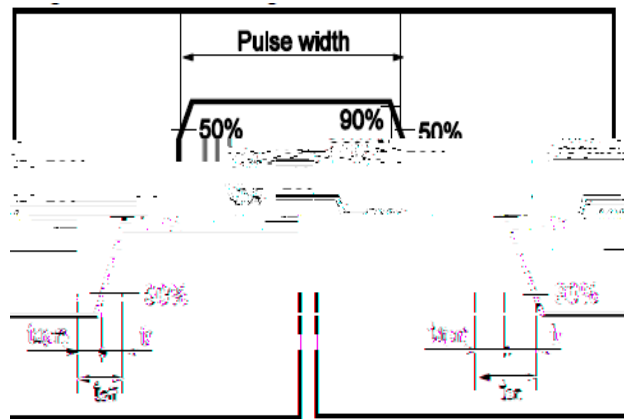


Fig.11 Avalanche Measurement Circuit

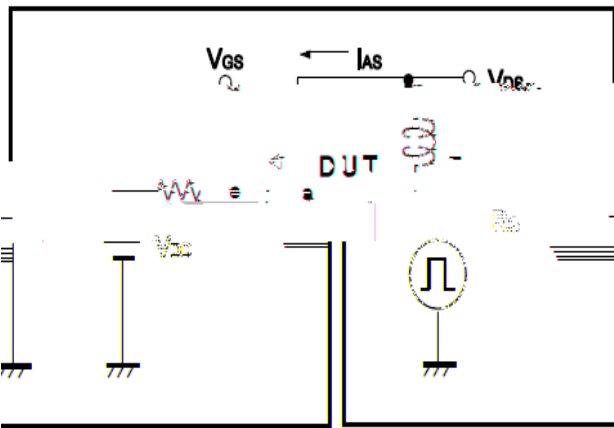
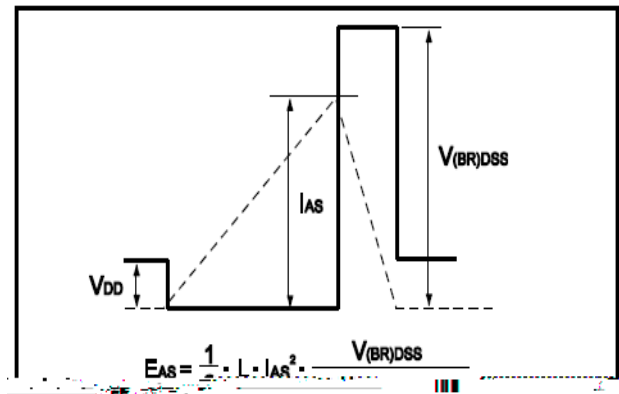


Fig.12 Avalanche Waveform





Unit mm

SYMBOL	min	max	SYMBOL	min	max
A	2.10	2.50	B	0.85	1.25
b	0.50	0.80	b1	0.50	0.90
b2	0.45	0.70	C	0.45	0.70
D	6.30	6.75	D1	5.10	5.50
E	5.30	6.30	e1	2.25	2.35
L1	9.20	10.60	e2	4.45	4.75
L2	0.90	1.75	L3	0.60	1.10
K	0.00	0.23			

