• General Description

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

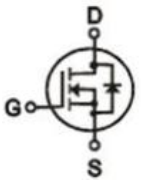
• Features

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

•Application

- ■SMPS 2nd Synchronous Rectifier
- ■Load switch
- ■BLDC Motor driver

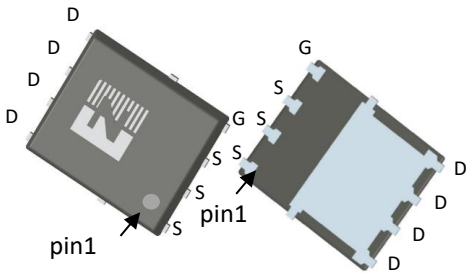
• Product Summary



V_{DS} =60V

$R_{DS(ON)}$ =2.6mΩ

I_D =110A



DFN5 x 6

•Ordering Information:

Part NO.	ZMS030N06HN
Marking	ZMS030N06H
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

•Absolute Maximum Ratings (T_C =25℃)

Parameter	Symbol	Conditions	Rating	Unit
Drain-Source Voltage	V_{DS}	25 °C ≤ T_j ≤ 150 °C	60	V
Gate-Source Voltage	V_{GS}	Pulsed ①	+20/-20	V
	V_{GS}	DC;T_j ≤ 175 °C	+20/-10	V
Continuous Drain Current	I_D	T_C=25℃	110	A
	I_D	T_C=75℃	83	A
	I_D	T_C=100℃	69	A
Pulsed Drain Current	I_{DM}	pulsed; t_p ≤ 10 μs; T_{mb} = 25 °C;	330	A
Total Power Dissipation	P_D	T_C=25℃	136	W
Total Power Dissipation	P_D	T_A=25℃	4.0	W
Operating Junction Temperature	T_J		-55 to 175	℃
Storage Temperature	T_{STG}		-55 to 175	℃
Single Pulse Avalanche Energy	E_{AS}	L=0.1mH, VGS=10V, Rg=25Ω, T_J=25	232	mJ
ESD Level (HBM)			Class 2	

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	1.1	°C/W
Thermal resistance, junction - ambient②	R_{thJA}	-	-	37	°C/W
Soldering temperature, wave soldering for 10s	T_{sold}	-	-	260	°C

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V, I_D =250uA	60			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}=60V, 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=30A		2.6	3.4	mΩ
Forward Transconductance	g_{FS}	V_{DS} =25V, I_D=10A		25		s
Source-drain voltage	V_{SD}	Is=30A		0.8	1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Risistance	R_g	f = 1MHz		2.6		Ω
Input capacitance	Ciss	V_{GS}=0V, V_{DS}=25V f = 1MHz	-	4000	-	pF
Output capacitance	Coss		-	1730	-	
Reverse transfer capacitance	Crss		-	80	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} = 15V I_D = 20A V_{GS} = 10V	-	67	-	nC
Gate - Source charge	Qgs		-	15	-	
Gate - Drain charge	Qgd		-	11	-	
Turn-ON Delay time	$t_{D(on)}$	V_{GS}=10V, V_{DS}=15V R_G =6Ω, I_D =15A		23		ns
Turn-ON Rise time	t_r			11		ns
Turn-Off Delay time	$t_{D(off)}$			56		ns
Turn-Off Fall time	t_f			10		ns
Reverse Recovery Time	t_{RR}	dI_S/dt = 500 A/us, I_S = 20 A		26		ns
Reverse Recovery Charge	Q_{RR}			91		nC

Fig.1 Gate-Charge Characteristics

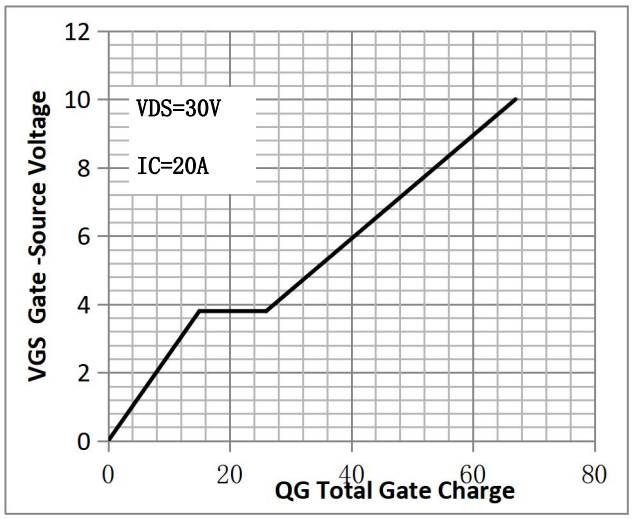


Fig.2 Capacitance Characteristics

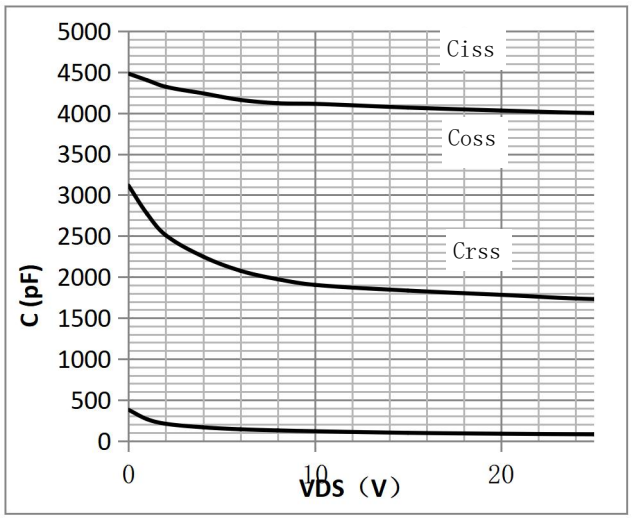


Fig.3 Power Dissipation

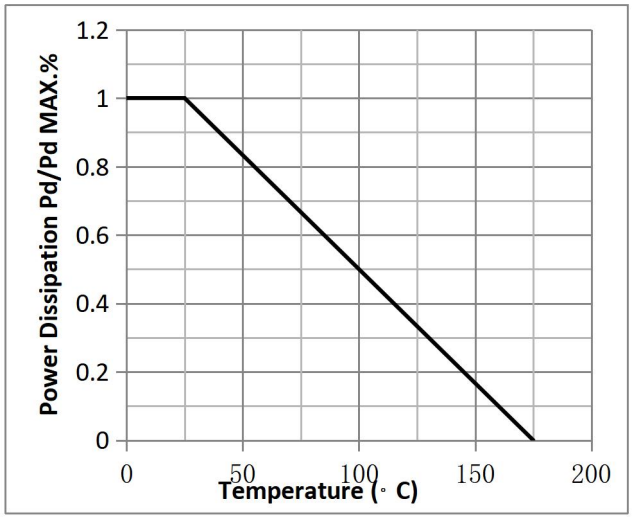


Fig.4 Typical output Characteristics

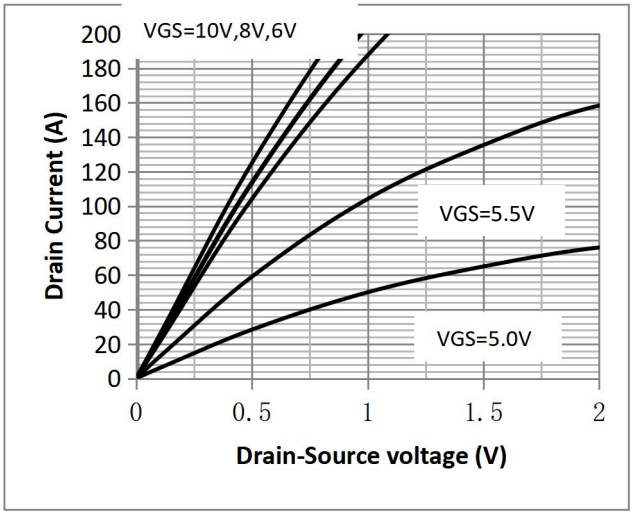


Fig.5 Threshold Voltage V.S Junction Temperature

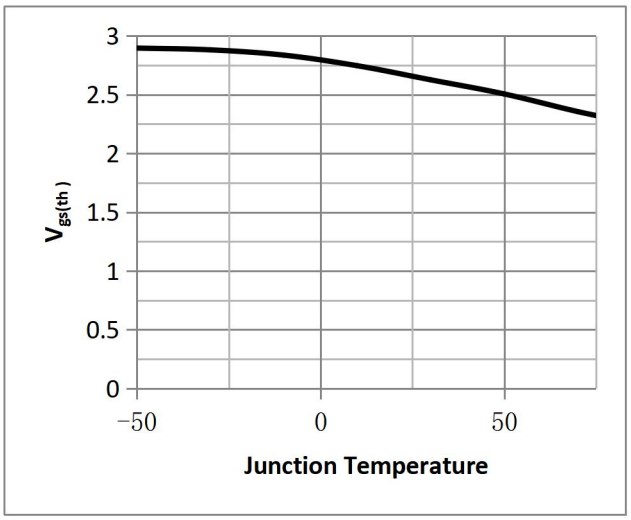


Fig.6 Resistance V.S Drain Current

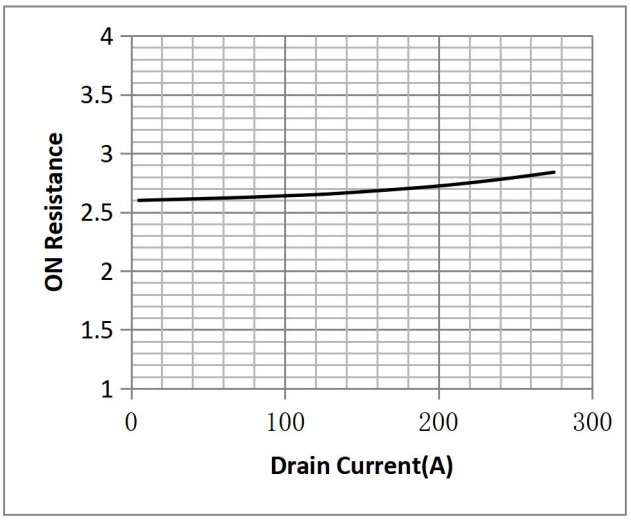


Fig.7 On-Resistance VS Gate Source Voltage

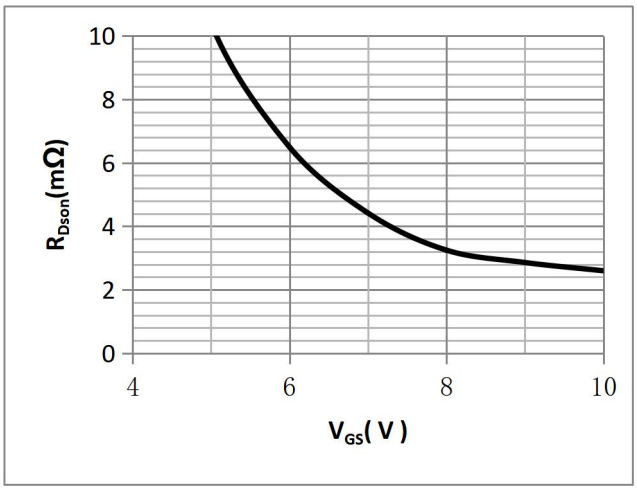


Fig.8 On-Resistance V.S Junction Temperature

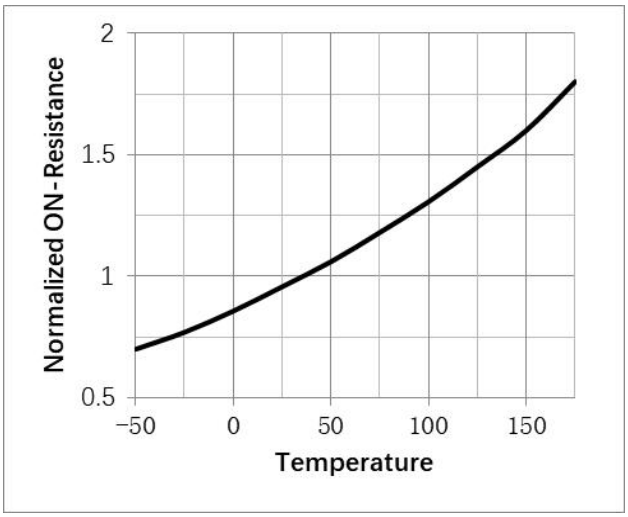


Fig.9 SOA Maximum Safe Operating Area

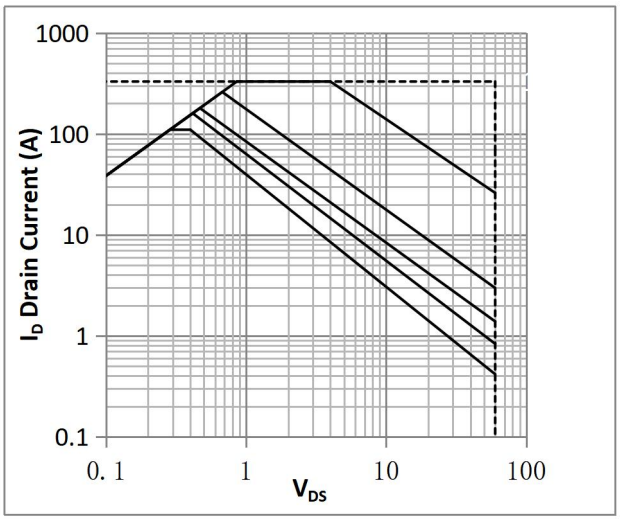


Fig.10 ID-Junction Temperature

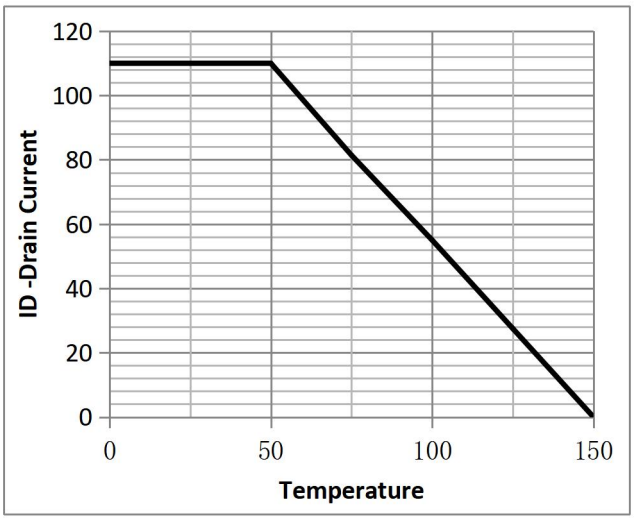


Figure 11. Diode Forward Voltage vs. Current

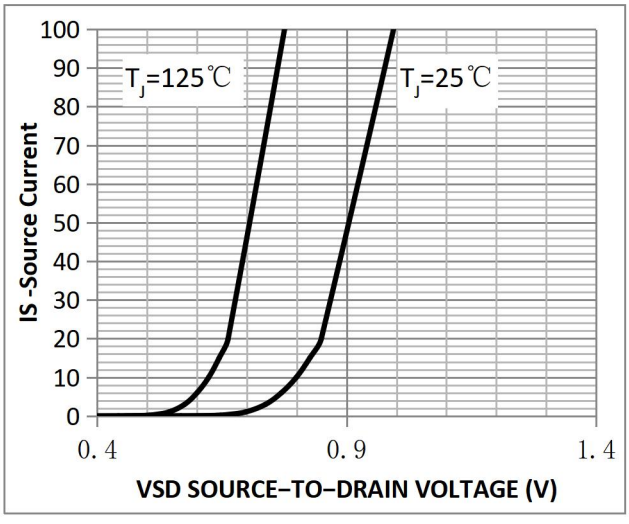


Figure 12. Transfer Characteristics

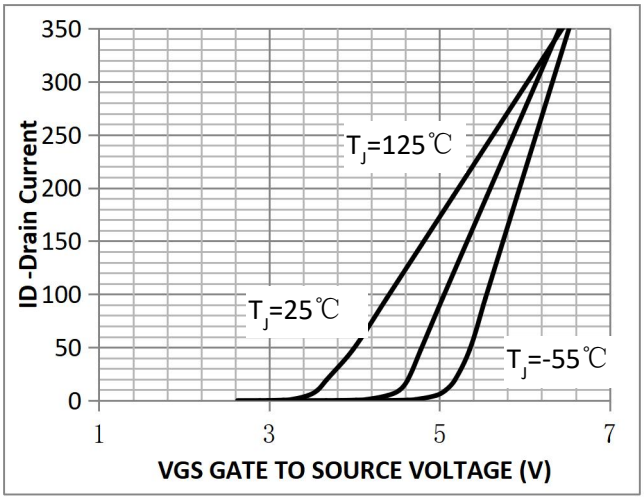


Fig.13 Switching Time Measurement Circuit

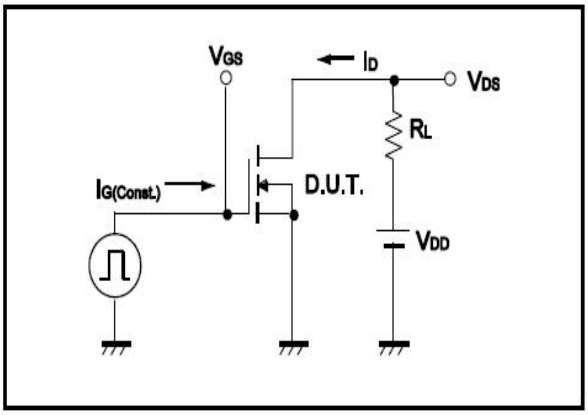


Fig.14 Gate Charge Waveform

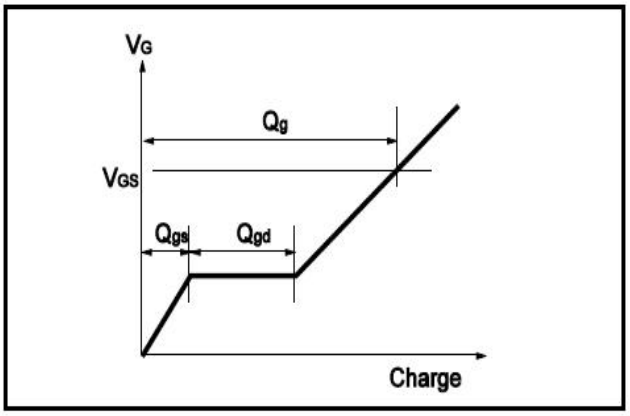


Fig.15 Switching Time Measurement Circuit

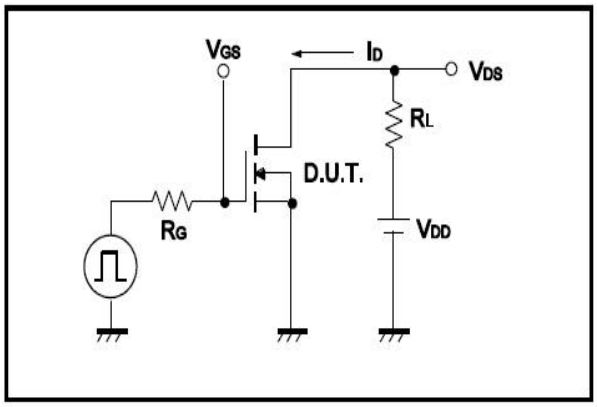


Fig.16 Gate Charge Waveform

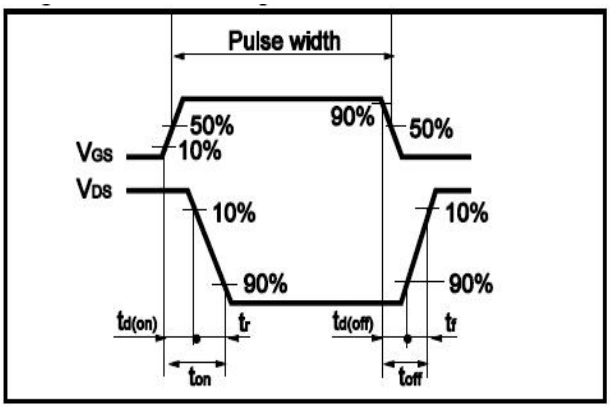


Fig.17 Avalanche Measurement Circuit

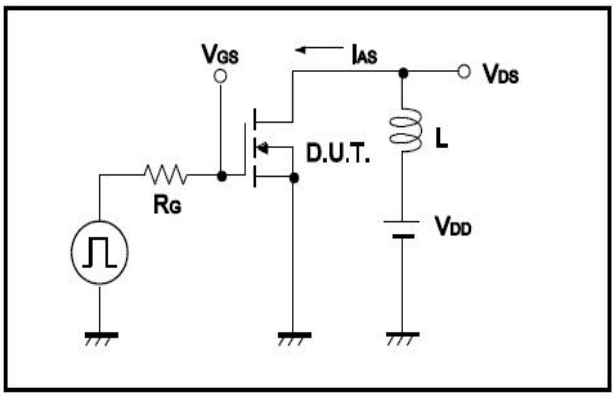
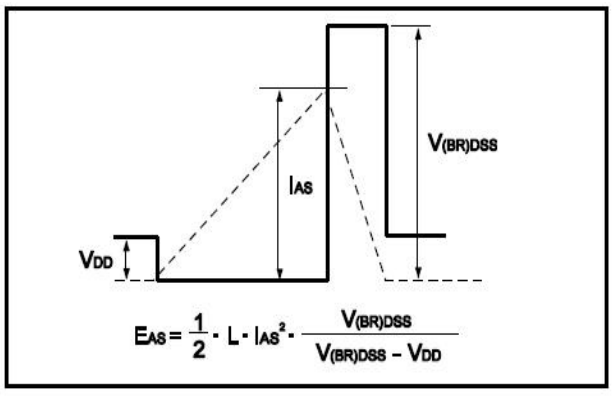
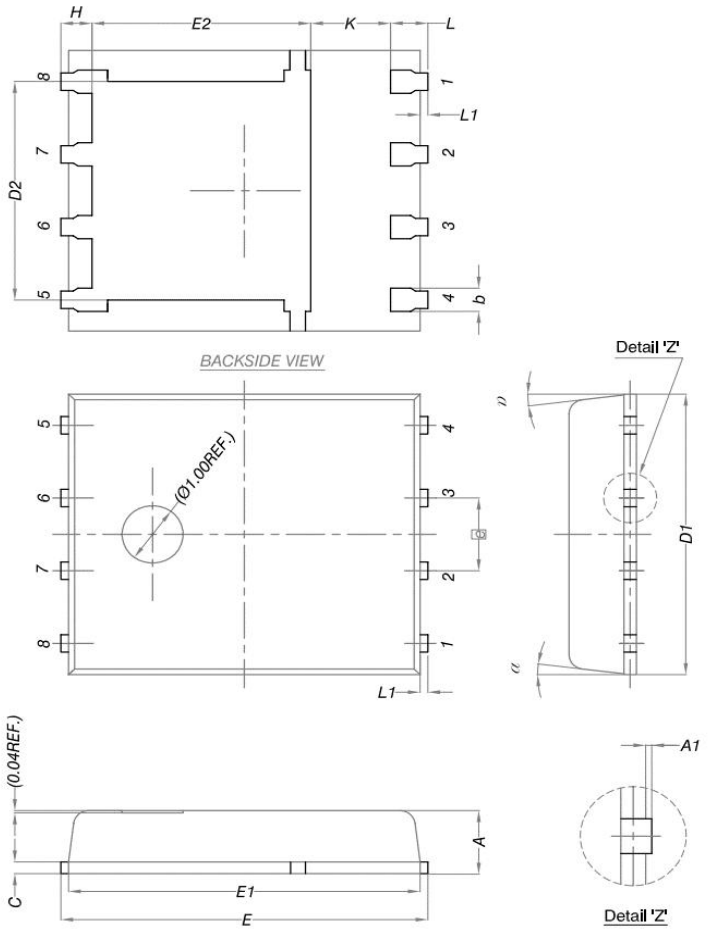


Fig.18 Avalanche Waveform



●Dimensions (DFN5×6)

Unit：mm



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.33	0.41	0.51
C	0.20	0.25	0.30
D1	4.80	4.90	5.00
D2	3.61	3.81	3.96
E	5.90	6.00	6.10
E1	5.70	5.75	5.80
E2	3.38	3.58	3.78
e	1.27 BSC		
H	0.41	0.51	0.61
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.06	0.13	0.20
α	0°	-	12°

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;

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