

Symbol	Nch+Nch
V_{DSS}	30V
$R_{DS(on),max@ VGS=10V}$	12m Ω
$R_{DS(on),max@ VGS=4.5V}$	16m Ω
I_D	35A

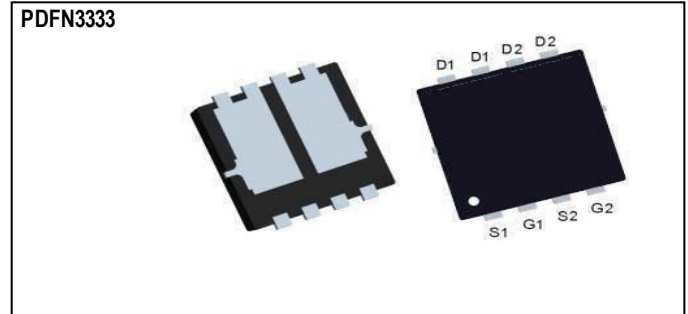
Features

- 1) Low on - resistance
- 2) Pb-free lead plating ; RoHS compliant
- 3) Halogen Free

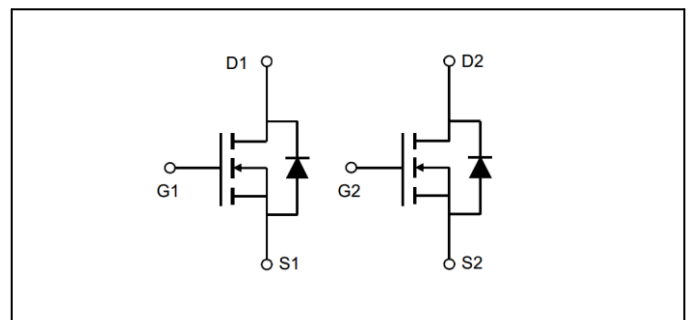
Application

Switching

Outline



Inner circuit



Packaging specifications

Type	Packing	Embossed Tape
	Reel size (mm)	180
	Tape width (mm)	8.0
	Basic ordering unit (pcs)	5000
	Taping code	TB
	Marking	AD30K35D3

Absolute maximum ratings (T_a = 25°C , unless otherwise specified)

Parameter	Symbol	Value	Unit	
Drain - Source voltage	V_{DSS}	30	V	
Continuous drain current	$T_c = 25^\circ C$	I_D	35	A
	$T_a = 25^\circ C$	I_D	9.5	A
Pulsed drain current	I_{DP}	75	A	
Gate - Source voltage	V_{GSS}	± 20	V	
Avalanche current, single pulse	I_{AS}	22	A	
Avalanche energy, single pulse	E_{AS}	22	mJ	
Power dissipation	P_D	26	W	
Junction temperature	T_j	150	$^\circ C$	
Operating junction and storage temperature range	T_{stg}	-55 to +150	$^\circ C$	

Thermal resistance

Parameter	Symbol	Values			Unit
		Min.	Typ.	Max.	
Thermal resistance, junction - ambient	R_{thJA}	-	-	75	$^{\circ}\text{C}/\text{W}$

Electrical characteristics ($T_a = 25^{\circ}\text{C}$)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Drain - Source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	30	-	-	V
Breakdown voltage temperature coefficient	$\Delta V_{(BR)DSS} / \Delta T_j$	$I_D = 250\mu\text{A}$ referenced to 25°C	-	0.023	-	$\text{mV}/^{\circ}\text{C}$
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 24\text{V}, V_{GS} = 0\text{V}$	-	-	1	μA
Gate - Source leakage current	I_{GSS}	$V_{GS} = \pm 20\text{V}, V_{DS} = 0\text{V}$	-	-	± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.0	-	2.5	V
Gate threshold voltage temperature coefficient	$\Delta V_{GS(th)} / \Delta T_j$	$I_D = 250\mu\text{A}$ referenced to 25°C	-	-5.08	-	$\text{mV}/^{\circ}\text{C}$
Static drain - source on - state resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 15\text{A}$	-	-	12	m Ω
		$V_{GS} = 4.5\text{V}, I_D = 10\text{A}$	-	-	16	
Gate resistance	R_G	$f = 1\text{MHz}$, open drain	-	1.8	-	Ω
Forward Transfer Admittance	$ Y_{fs} $	$V_{DS} = 5\text{V}, I_D = 12\text{A}$	-	24.4	-	S

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2.The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$
- 3.The EAS data show s Max. rating . The test condition is $V_{DD}=25\text{V}, V_{GS}=10\text{V}, L=0.1\text{mH}, I_{AS}=22\text{A}$
- 4.The power dissipation is limited by 175°C junction temperature
- 5.The data is theoretically the same as I_D and I_{DM} , in real applications, should be limited by total power dissipation.

Electrical characteristics (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Input capacitance	C _{iss}	V _{GS} = 0V V _{DS} = 15V	-	896	-	pF
Output capacitance	C _{oss}	f = 1MHz	-	126	-	
Reverse transfer capacitance	C _{rss}		-	108	-	
Turn - on delay time	t _{d(on)}	V _{DD} = 15V, V _{GS} = 10V	-	6.4	-	ns
Rise time	T _r	I _D = 20A R _G = 1.5Ω	-	39	-	
Turn - off delay time	t _{d(off)}		-	21	-	
Fall time	T _f		-	4.7	-	

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Total gate charge	Q _g	V _{DD} = 15V I _D = 12A	-	14.1	-	nC
Gate - Source charge	Q _{gs}	V _{GS} = 10V		-	9.82	
Gate - Drain charge	Q _{gd}	V _{GS} = 4.5V	-	5.54	-	

Body diode electrical characteristics (Source-Drain) (T_a = 25°C)

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Continuous forward current	I _S	T _a = 25°C	-	-	35	A
Pulse forward current	I _{SP}		-	-	75	
Forward voltage	V _{SD}	V _{GS} = 0V, I _S = 1.67A	-	-	1	V

Electrical characteristic curves

Fig.1 Power Dissipation Derating Curve

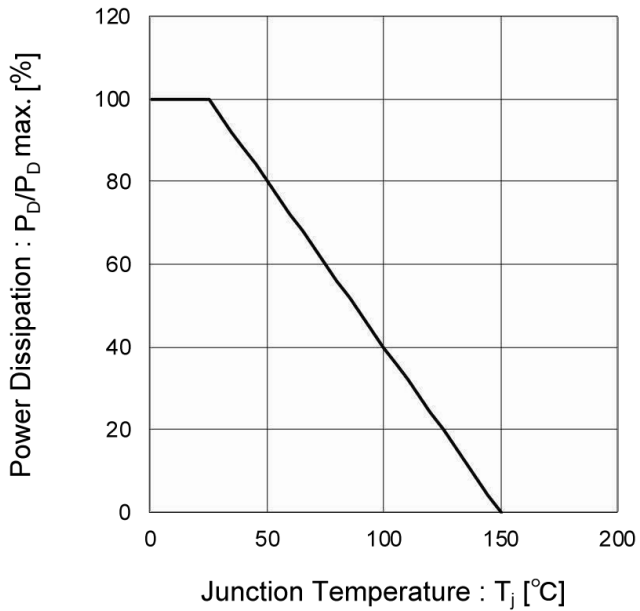
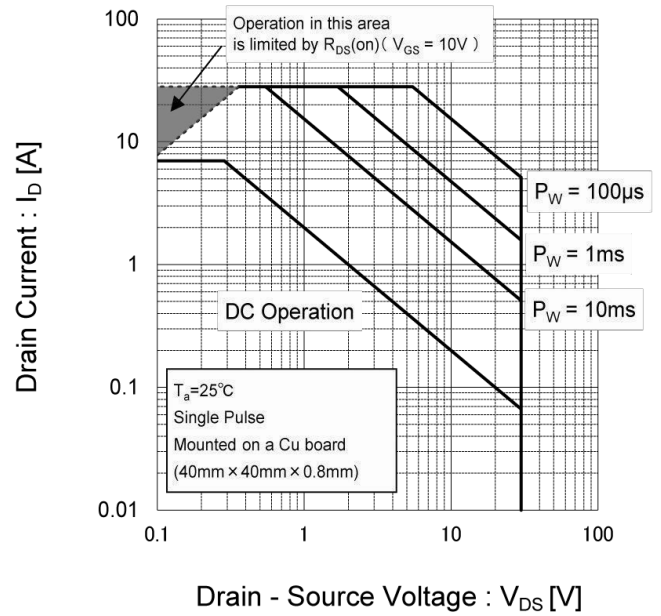


Fig.2 Maximum Safe Operating Area



Electrical characteristic curves

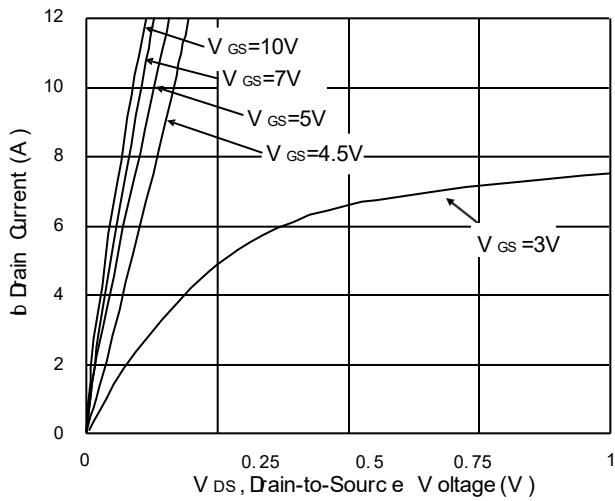


Fig.3 Typical Output Characteristics

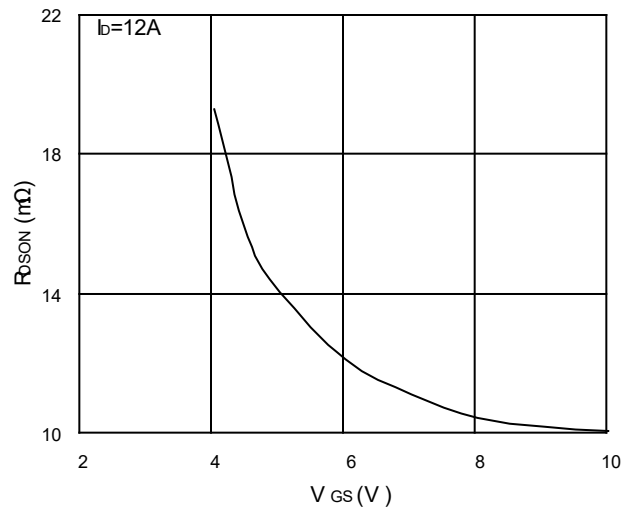


Fig.4 On-Resistance vs. G-S Voltage

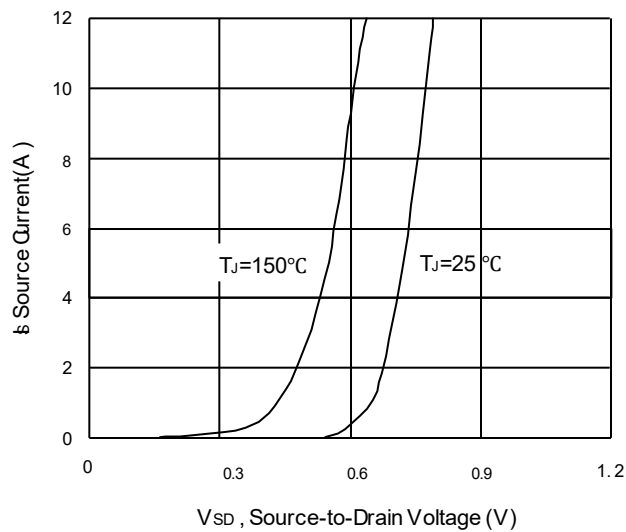


Fig.5 Forward Characteristics of Reverse

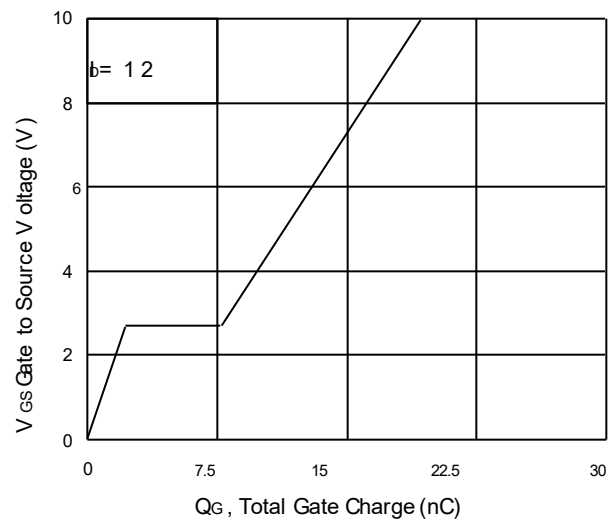


Fig.6 Gate-charge Characteristics

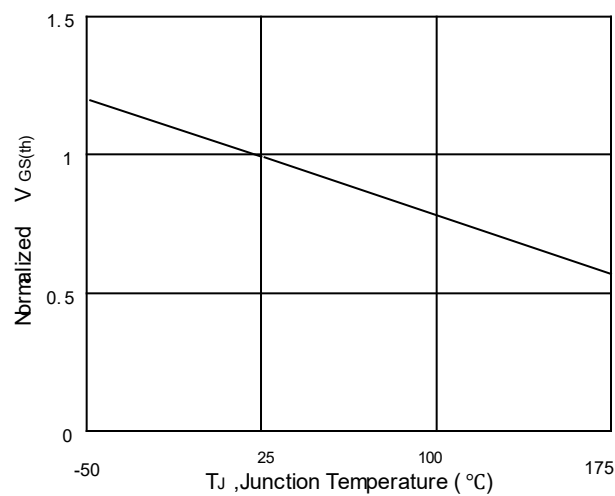


Fig.7 Normalized $V_{GS(th)}$ vs. T_J

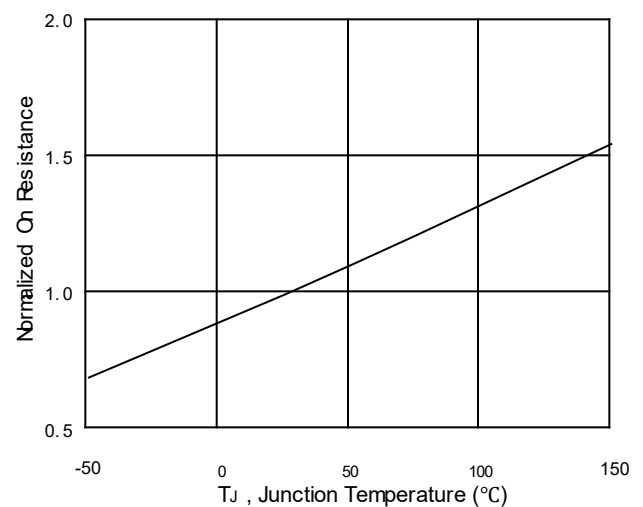


Fig.8 Normalized $R_{DS(on)}$ vs. T_J

Electrical characteristic curves

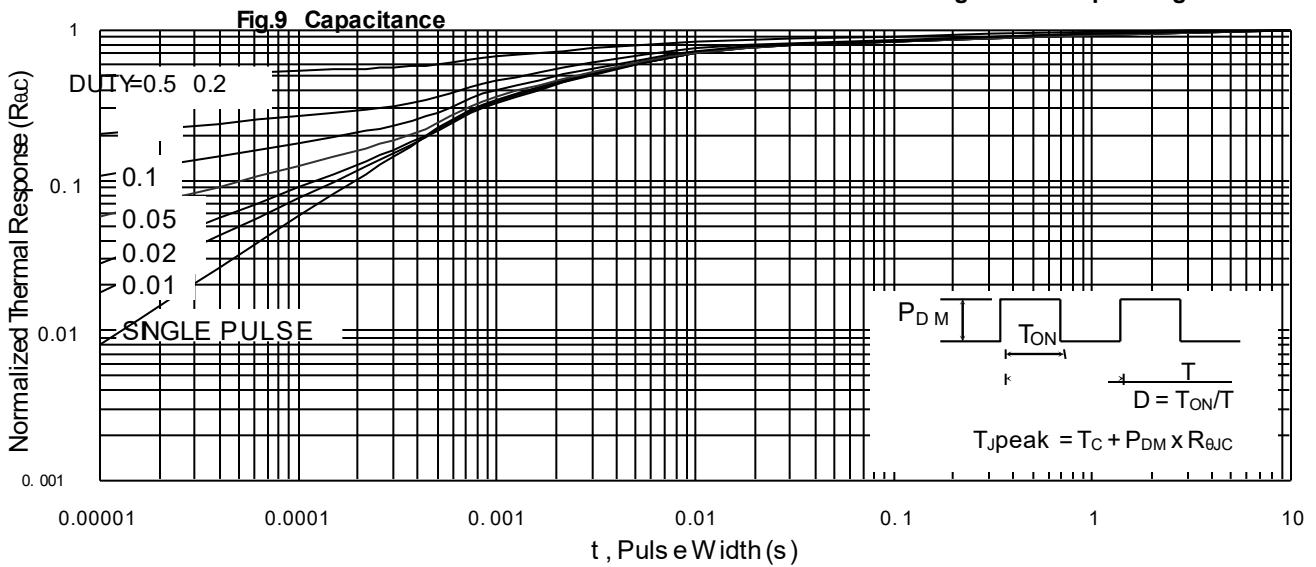
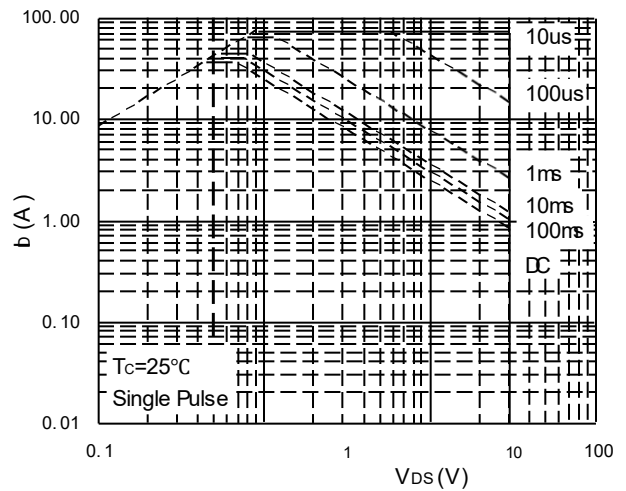
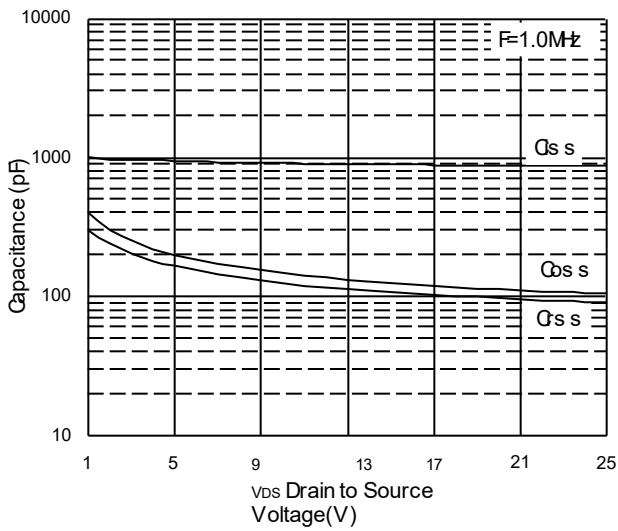


Fig.11 Normalized Maximum Transient Thermal Impedance

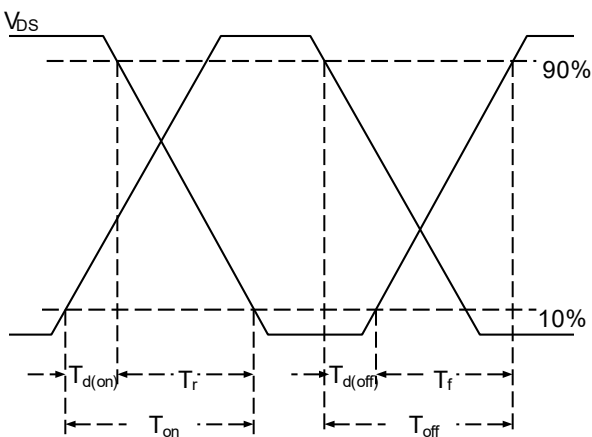


Fig.12 Switching Time Waveform

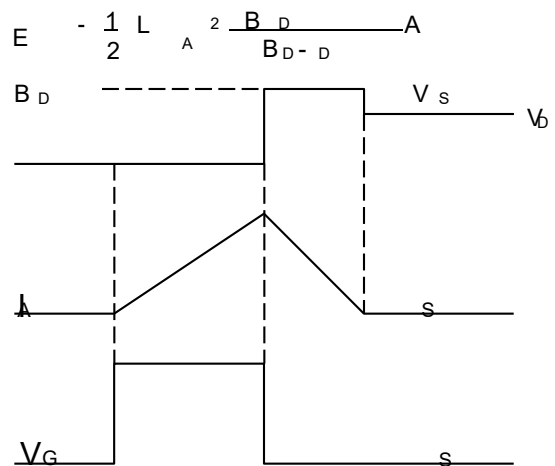


Fig.13 Unclamped Inductive Waveform

Measurement circuits

Fig.1-1 Switching Time Measurement Circuit

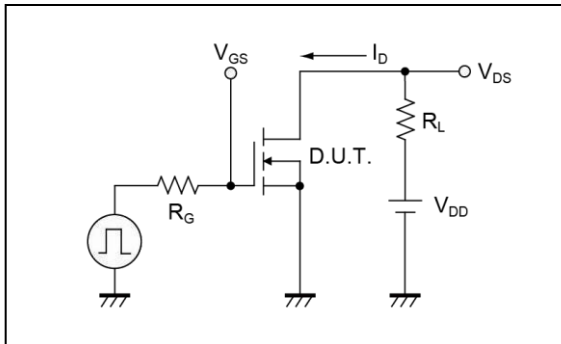


Fig.1-2 Switching Waveforms

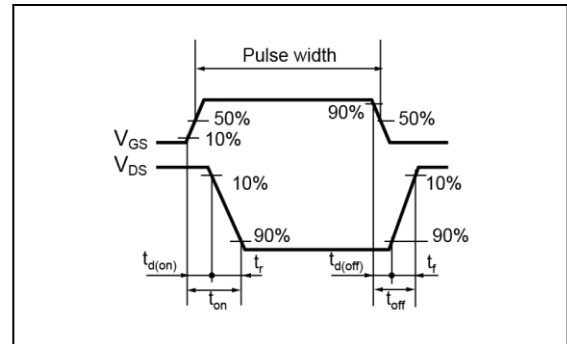


Fig.2-1 Gate Charge Measurement Circuit

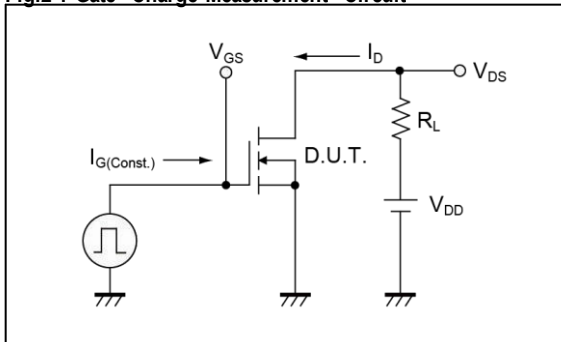


Fig.2-2 Gate Charge Waveform

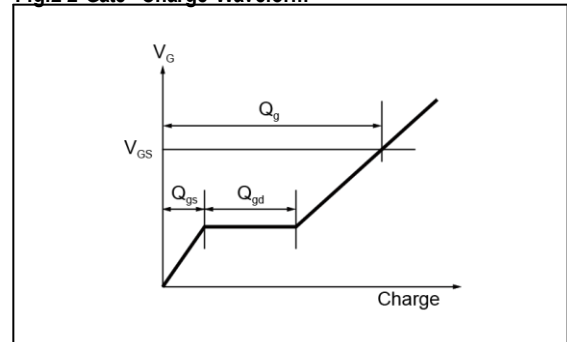


Fig.3-1 Avalanche Measurement Circuit

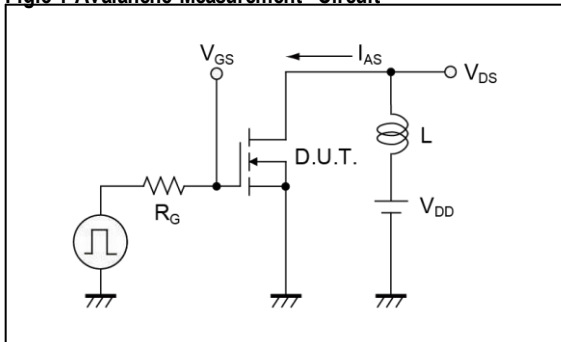
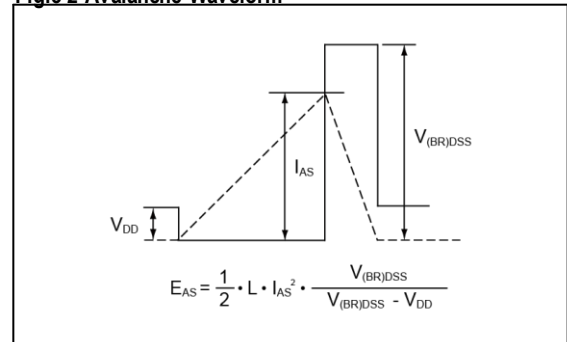


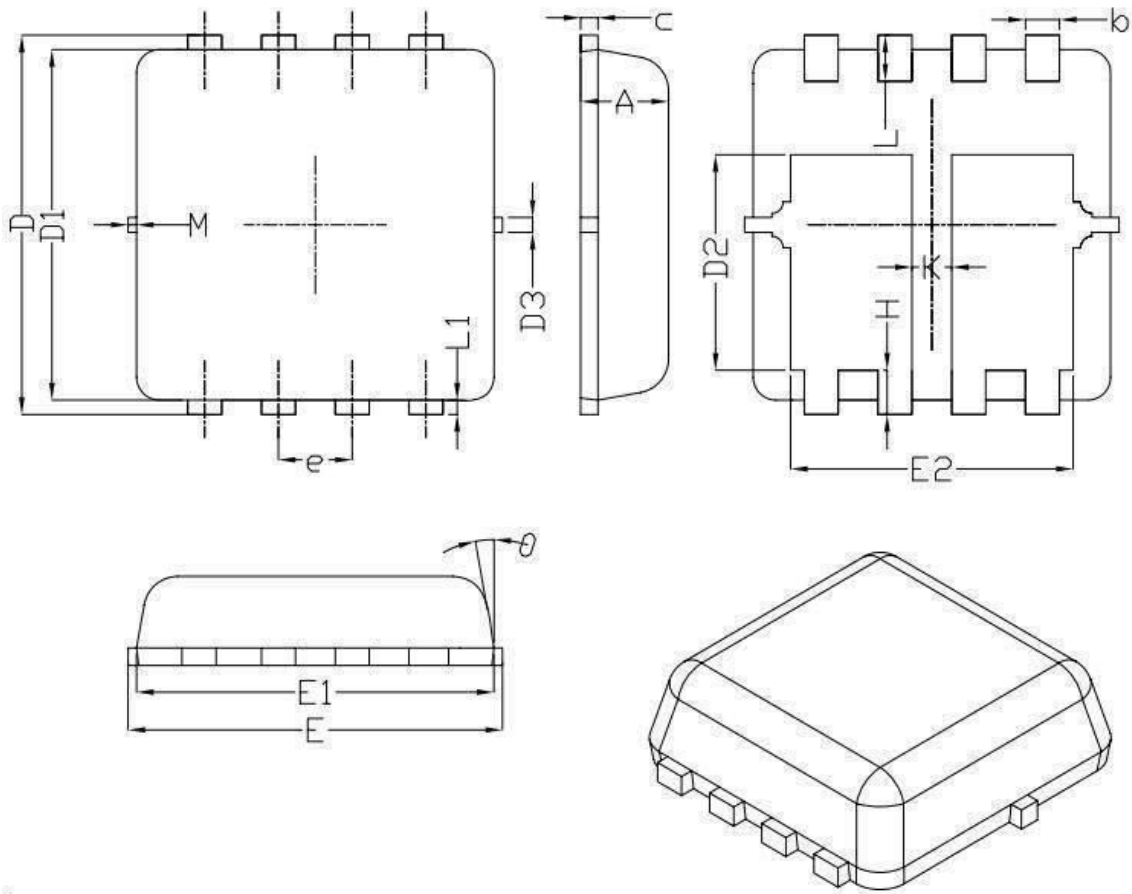
Fig.3-2 Avalanche Waveform



Notice

This product might cause chip aging and breakdown under the large electrified environment. Please consider to design ESD protection circuit.

Dimensions



Symbol	Dimensions (unit: mm)		
	Min	Typ	Max
A	0.70	0.75	0.80
b	0.25	0.30	0.35
c	0.10	0.15	0.25
D	3.25	3.35	3.45
D1	3.00	3.10	3.20
D2	1.78	1.88	1.98
D3	--	0.13	--
E	3.20	3.30	3.40
E1	3.00	3.15	3.20
E2	2.39	2.49	2.59
e	0.65 BSC		
H	0.30	0.39	0.50
L	0.30	0.40	0.50
L1	--	0.13	--
K	0.30	--	--
θ	--	10°	12°
M	*	*	0.15
* Not Specified			