● 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

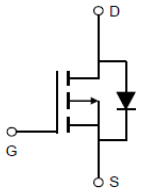
●Application

■BLDC Motor driver

■Load Switch

■DC-DC

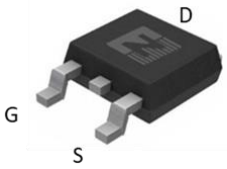
● Product Summary



V_{DS} =-60V

$R_{DS(ON)}$ =8mΩ

I_D =-60A



TO-252

●Ordering Information:

Part NO.	ZM080P06D
Marking	ZM080P06
Packing Information	REEL TAPE
Basic ordering unit (pcs)	2500

●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
Continuous Drain Current	I_D	T_C=25℃	-60	A
	I_D	T_C=75℃	-45	A
	I_D	T_C=100℃	-38	A
Pulsed Drain Current	I_{DM}	pulsed; t_p ≤ 10 μs; T_{mb} = 25 °C;	-180	A
Total Power Dissipation	P_D	T_C=25℃	62.5	W
Total Power Dissipation	P_D	T_A=25℃	2.5	W
Operating Junction Temperature	T_J		-55 to 150	℃
Storage Temperature	T_{STG}		-55 to 150	℃
Single Pulse Avalanche Energy	E_{AS}	L=0.1mH, VGS=10V, Rg=25Ω, T_J=25℃	210	mJ
ESD Level (HBM)			Class 2	

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	-	2.0	°C/W
Thermal resistance, junction - ambient②	R_{thJA}	-	-	50	°C/W
Soldering temperature	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	-1.3	-1.8	-2.5	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=-20A		8	10.5	mΩ
		V_{GS}=-4.5V, I_D=-16A③		10	14	mΩ
Forward Transconductance	g_{FS}	V_{DS} =-10V, I_D=-10A		32		s
Source-drain voltage	V_{SD}	Is=-20A			1.28	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Gate Risistance	R_g	f = 1MHz	-	3.1	-	Ω
Input capacitance	Ciss	f = 1MHz V_{DS}=-25V	-	10440	-	pF
Output capacitance	Coss		-	412	-	
Reverse transfer capacitance	Crss		-	325	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Qg	V_{DD} =-25V I_D =-10A V_{GS} =-10V	-	158	-	nC
Gate - Source charge	Qgs		-	26	-	
Gate - Drain charge	Qgd		-	27	-	

Fig.1 Gate-Charge Characteristics

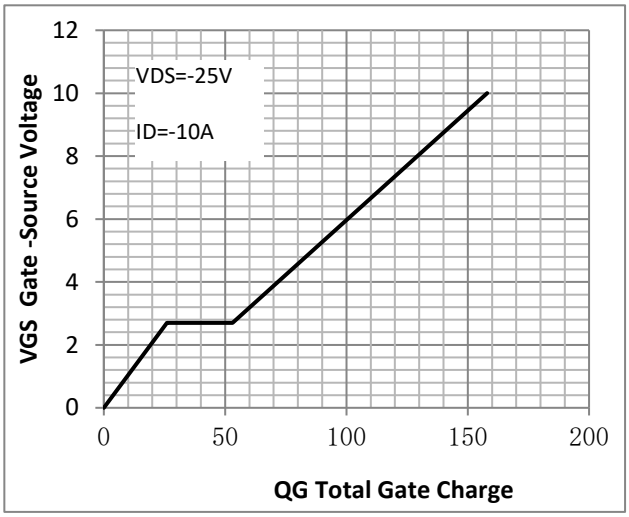


Fig.2 Capacitance Characteristics

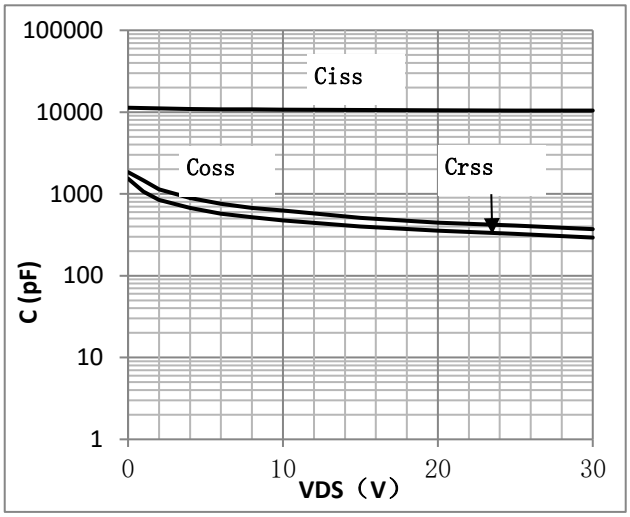


Fig.3 Power Dissipation

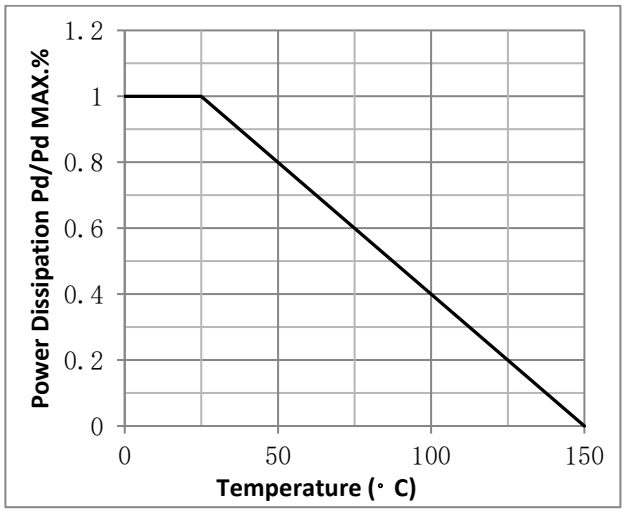


Fig.4 Typical output Characteristics

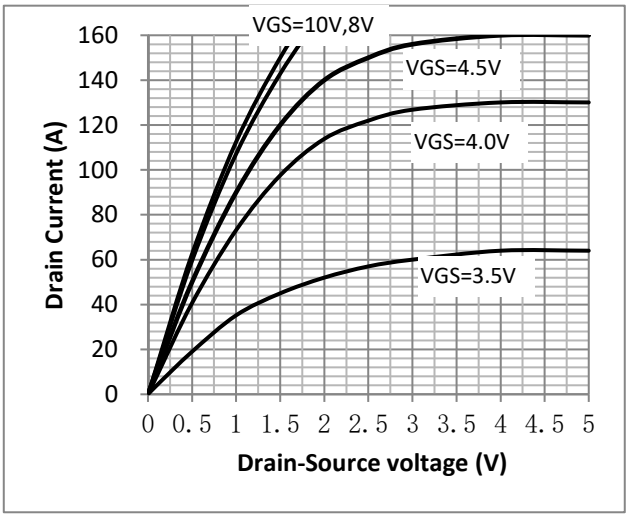


Fig.5 Threshold Voltage V.S Junction Temperature

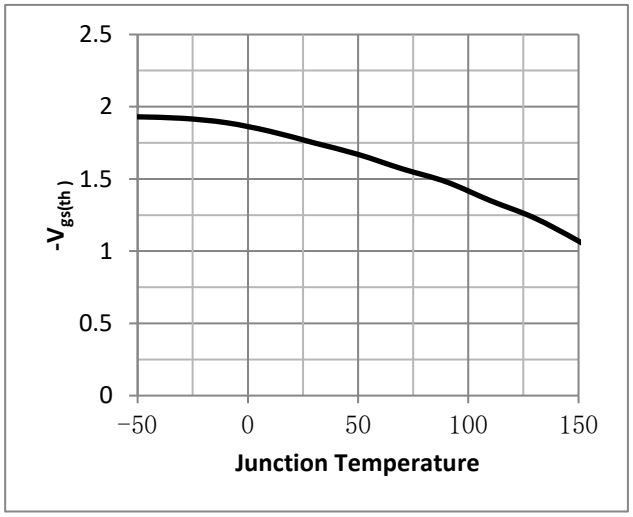


Fig.6 Resistance V.S Drain Current

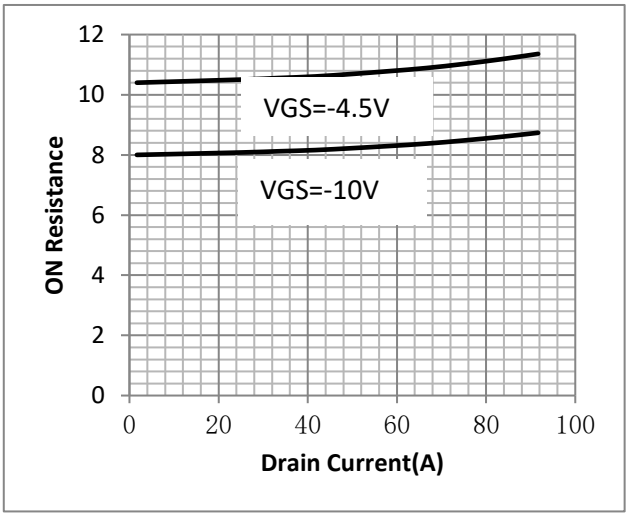
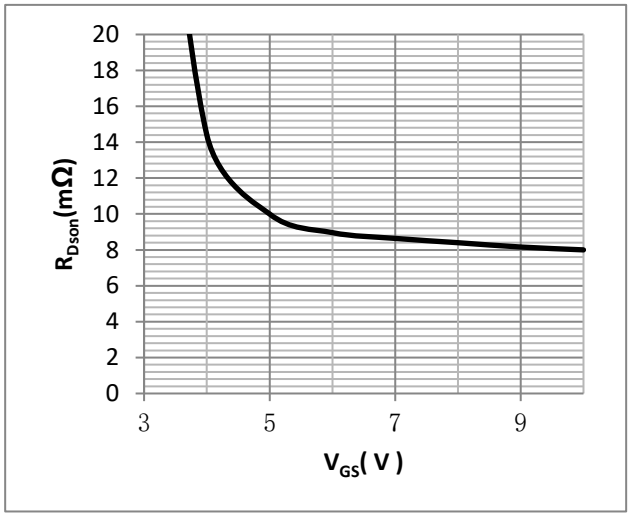


Fig.7 On-Resistance VS Gate Source Voltage

Fig.8 On-Resistance V.S Junction Temperature



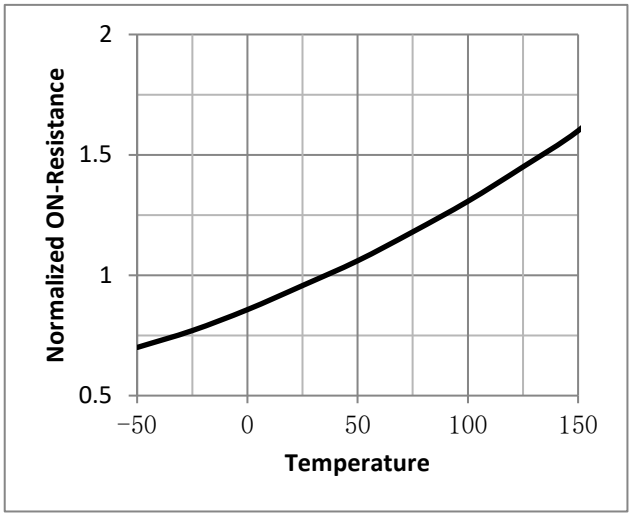
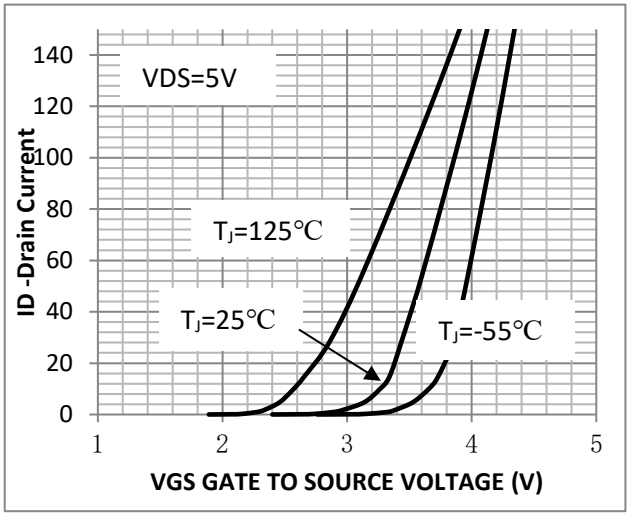


Figure.9 Transfer Characteristics

Figure.10 Diode Forward Voltage vs. Current



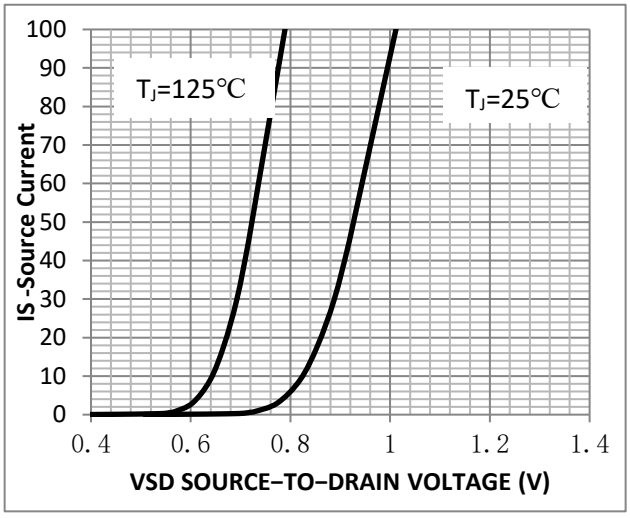
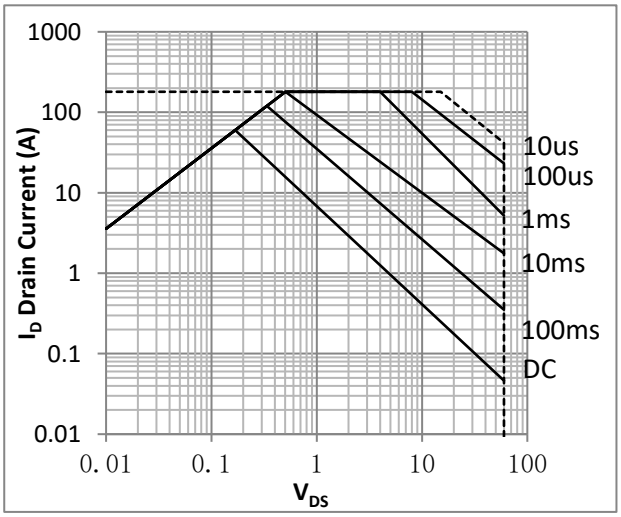


Fig.11 SOA Maximum Safe Operating Area

Fig.12 ID-Junction Temperature



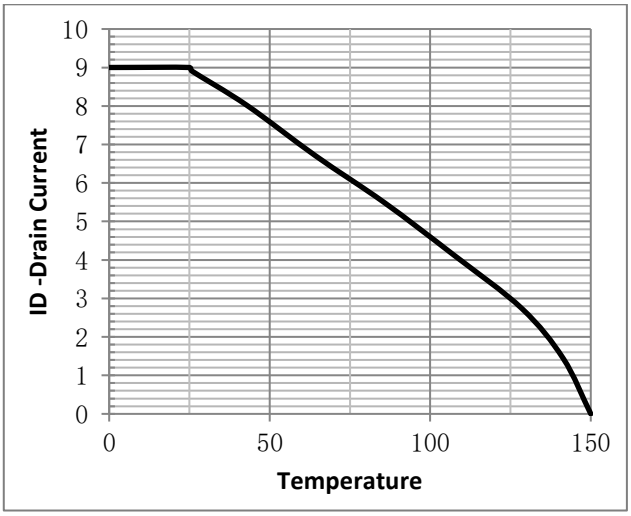


Fig.13 Gate Charge Measurement Circuit

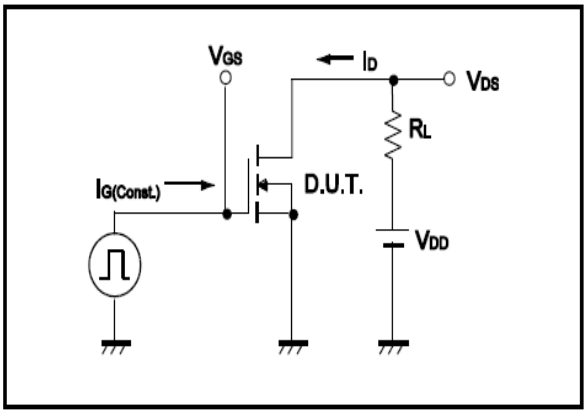


Fig.14 Gate Charge Waveform

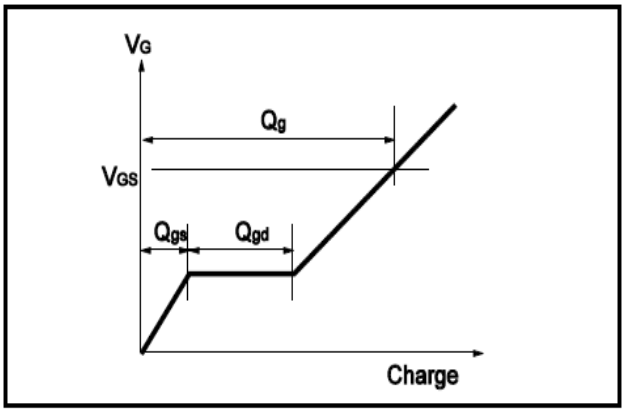


Fig.15 Switching Time Measurement Circuit

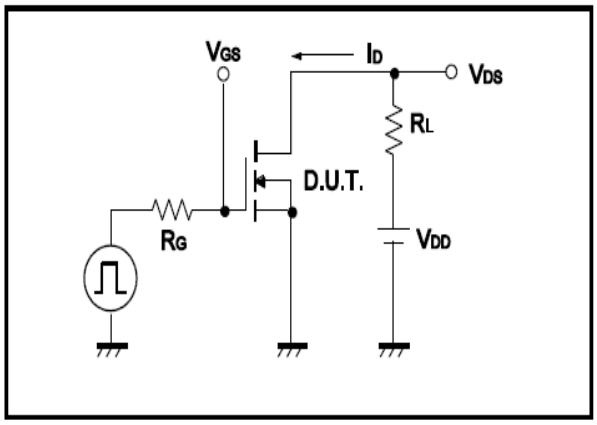


Fig.16 Switching Time Waveform

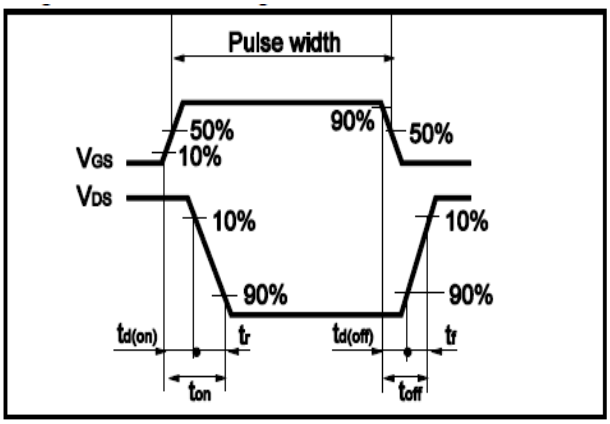


Fig.17 Avalanche Measurement Circuit

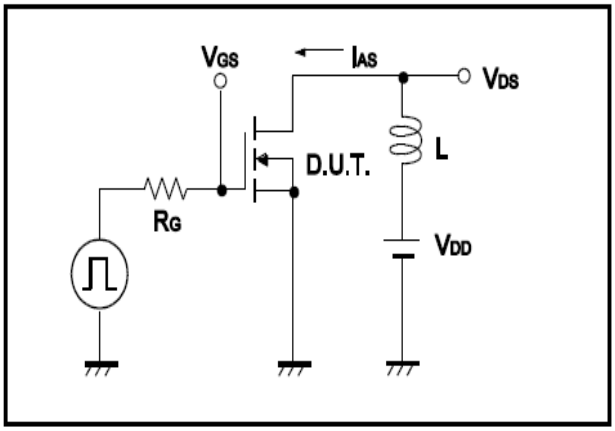
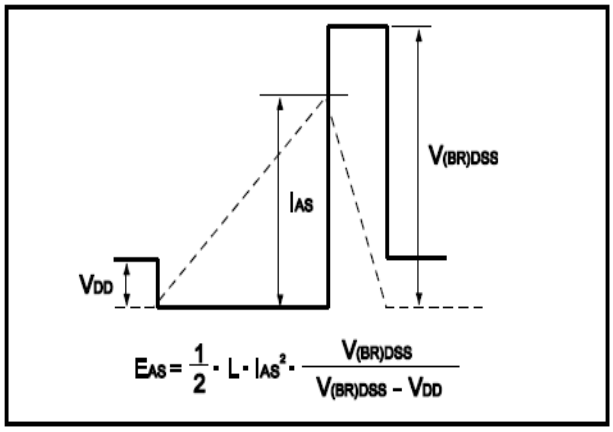


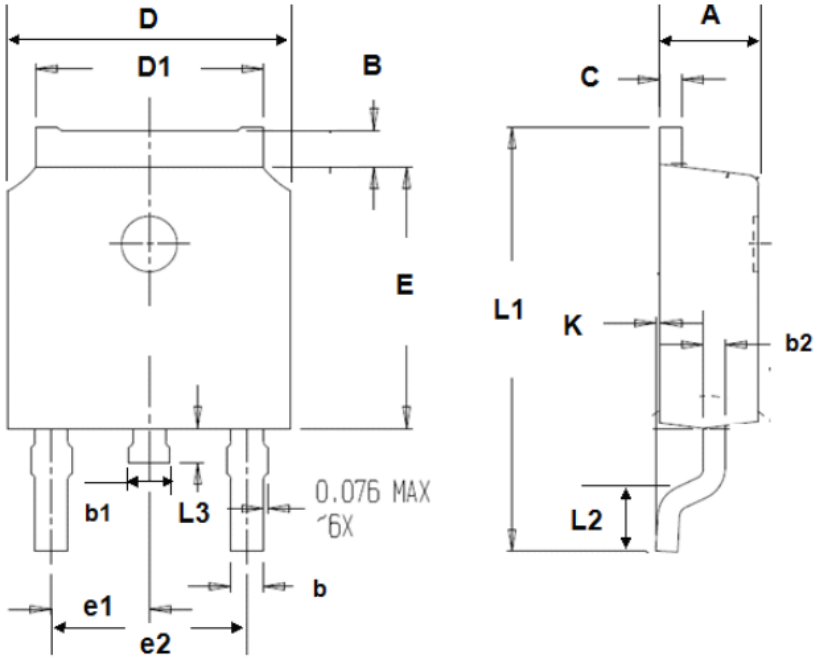
Fig.18 Avalanche Waveform



● Dimensions (TO-252)

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			



Note: ① Pulse Test: Pulse width ≤ 300μs, Duty cycle ≤ 2%, Accumulation time ≤50 hours;

② Device mounted on FR-4 substrate PC board, 2oz copper, with thermal bias to bottom layer 1inch square copper plate；

③ Vgs≥4.5V is required for practical application.

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