● General Description

The CH06N04N combines advanced trench MOSFET technology with a low resistance package to provide extremely low $R_{DS(ON)}$. This device is ideal for load switch and battery protection applications.

● Features

■ Advance high cell density Trench technology

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

■Low Gate Charge for fast switching ■Low Thermal resistance

●Application

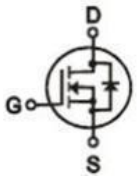
■MB/VGA Vcore

■SMPS 2nd Synchronous Rectifier

■POL application

■BLDC Motor driver

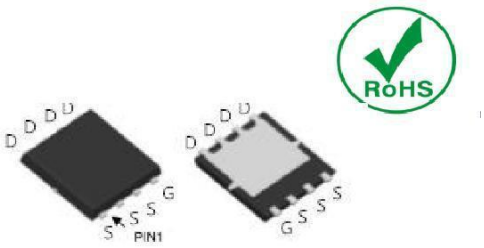
● Product Summary



V_{DS} =40V

$R_{DS(ON)}$ =7mΩ

I_D =80A



DFN5 x 6

●Ordering Information:

Part NO.	CH06N04N
Marking	CH06N04N
Packing Information	REEL TAPE
Basic ordering unit (pcs)	2500

●Absolute Maximum Ratings（T_C =25℃）

Parameter	**Symbol**	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	20	V
Continuous Drain Current	$I_{D@}$TC=25℃	80	A
	$I_{D@}$TC=75℃	60	A
	$I_{D@}$TC=100℃	40	A
Pulsed Drain Current	I_{DM}	80	A
Total Power Dissipation(TC=25℃)	P_D@TC=25℃	80	W
Total Power Dissipation(TA=100℃)	P_D@TC=100℃	25	W
Operating Junction Temperature	T_J	-55 to 175	℃
Storage Temperature	T_{STG}	-55 to 175	℃
Single Pulse Avalanche Energy@L=0.1mH	E_{AS}	47	mJ
Avalanche Current@L=0.1mH	I_{AS}	55	A

●Thermal resistance

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal resistance, junction - case	R_{thJC}	-	3.72		°C/W
Thermal resistance, junction - ambient	R_{thJA}	-	-	30	°C/W
Soldering temperature, wavesoldering for 10s	T_{sold}	-	-	125	°C

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} =0V,I_D =250uA	40			V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{GS} =V_{DS}, I_D =250uA	1	1.6	2.5	V
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, 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=1A		6.0	8.0	mΩ
		VGS=4.5V, ID=1A		9.0	12	mΩ
Forward Transconductance	g_{FS}	V_{DS} =15V, I_D=10A		15		s
Source-drain voltage	V_{SD}	Is=20A			1.20	V

●Electronic Characteristics

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	f = 1MHz	-	1102	-	pF
Output capacitance	C_{oss}		-	201	-	
Reverse transfer capacitance	C_{rss}		-	194	-	

●Gate Charge characteristics(T_a = 25℃)

Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	V_{DS} =20V	-	24	-	nC
Gate - Source charge	Q_{gs}	I_D = 10A	-	4.1	-	
Gate - Drain charge	Q_{gd}	V_{GS} = 10V	-	5.5	-	

Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

Fig. 1 Power Derating

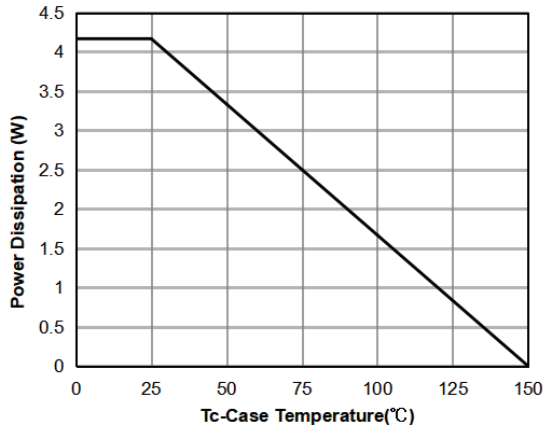


Fig. 2 Maximum Drain Current vs. Case Temperature

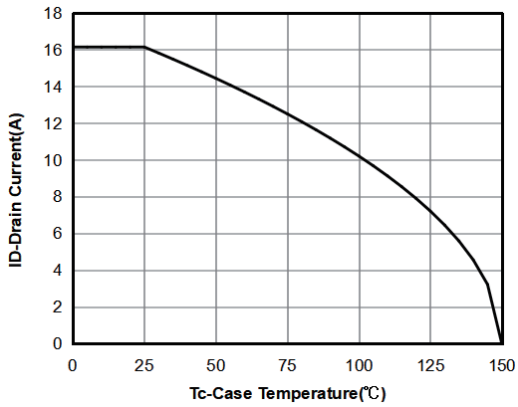


Fig. 3 Output Characteristics

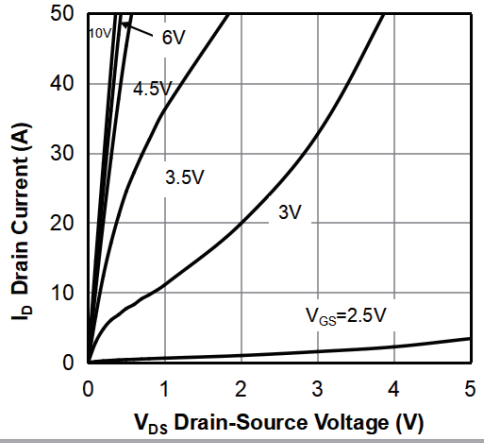


Fig. 4 Transfer Characteristics

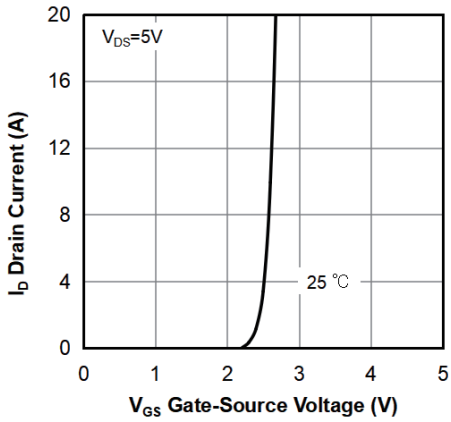


Fig. 5 On-Resistance vs. Drain Current and Gate Voltage

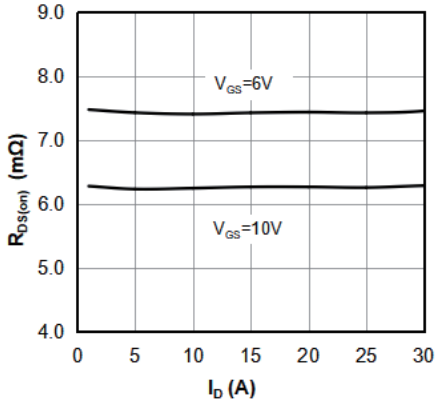


Fig. 6 On-Resistance vs. Junction Temperature/ Normalized On-Resistance

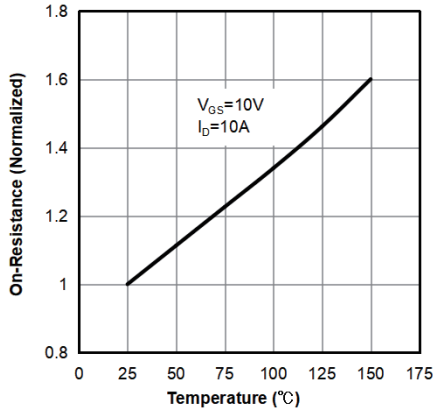


Fig. 7 On-Resistance vs. Gate-Source Voltage

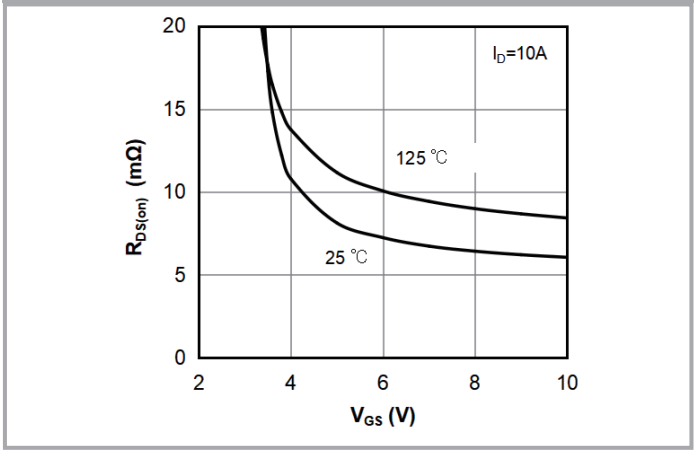


Fig. 8 Body-Diode Characteristics

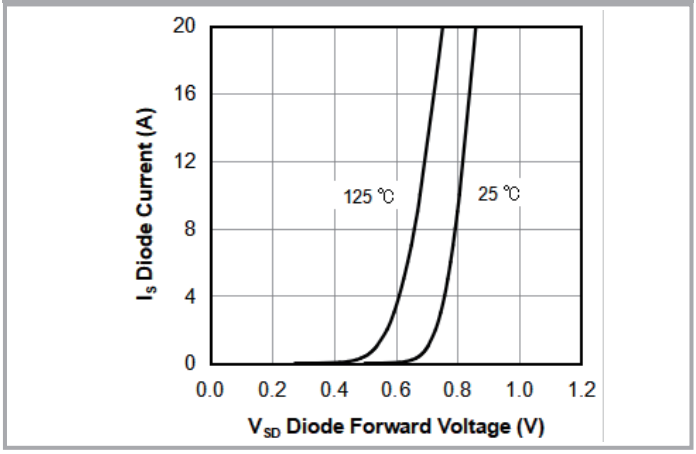


Fig. 9 Capacitance Characteristics

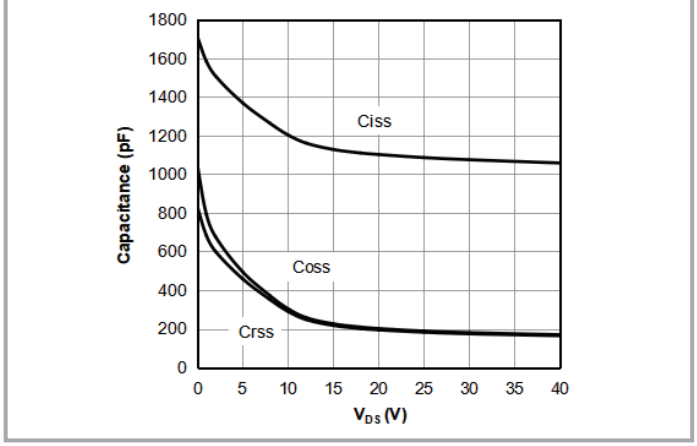


Fig. 10 Gate Charge Characteristics

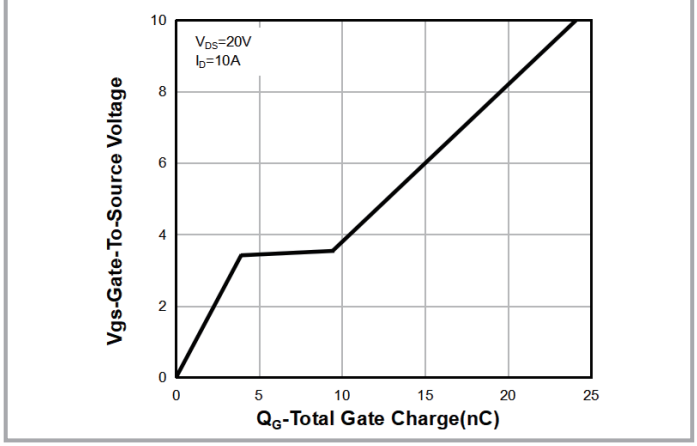


Fig. 11 Safe Operation Area

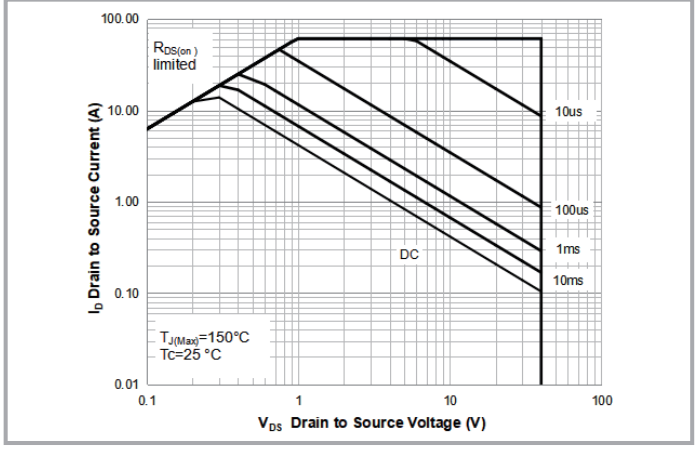
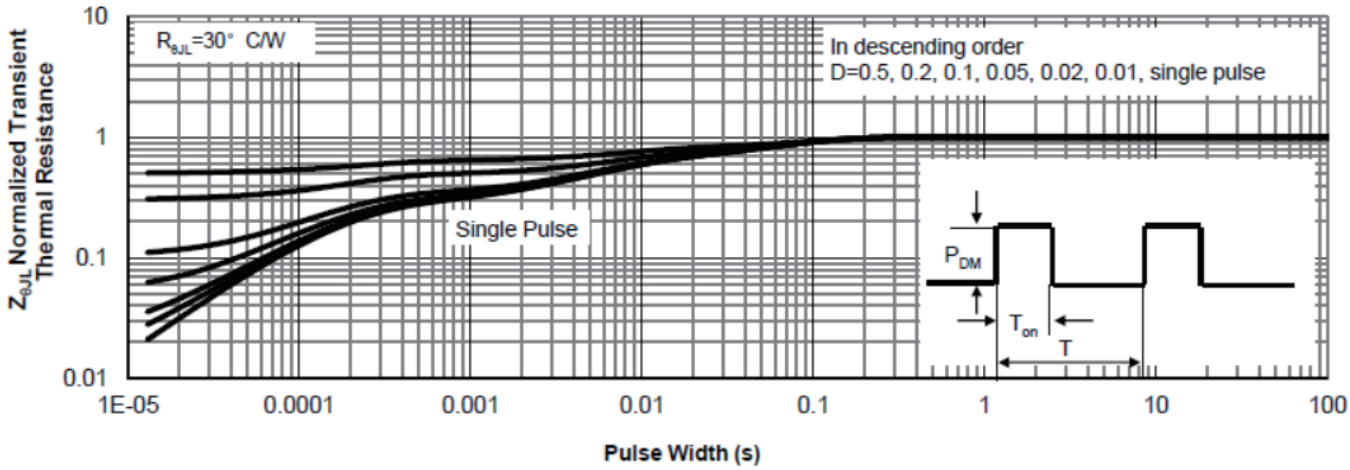


Fig. 12 Normalized Maximum Transient thermal impedance



Test Circuit

Fig.1-1 Switching times test circuit

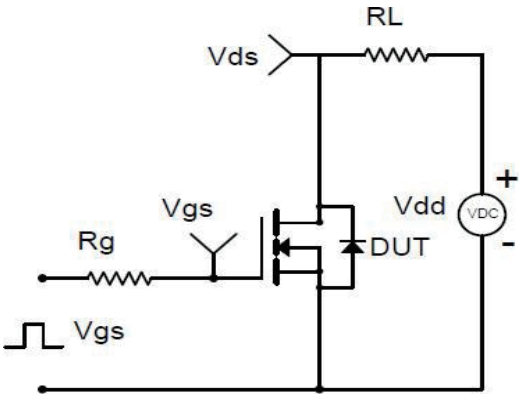


Fig.1-2 Switching Waveform

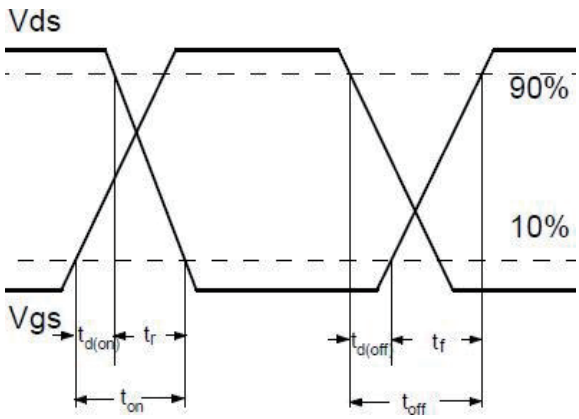


Fig.2-1 Gate charge test circuit

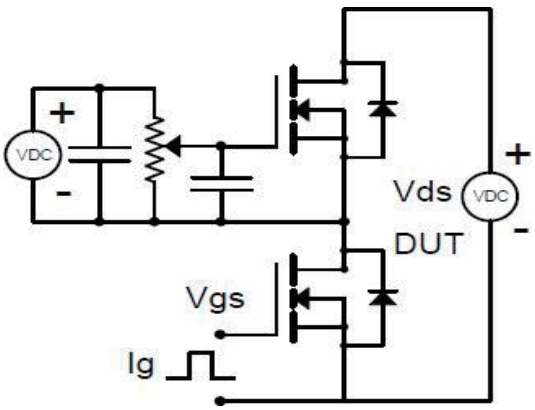


Fig.2-2 Gate charge waveform

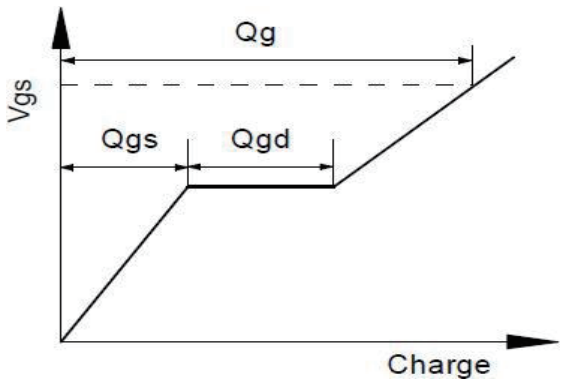


Fig.3-1 Avalanche test circuit

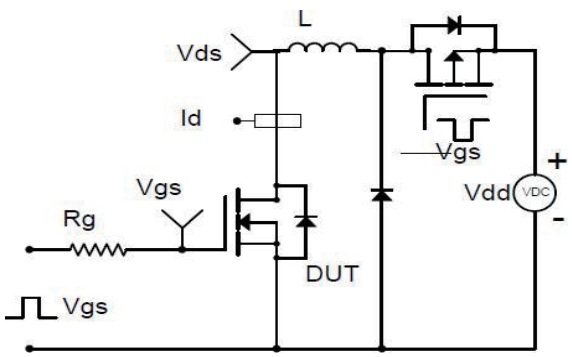
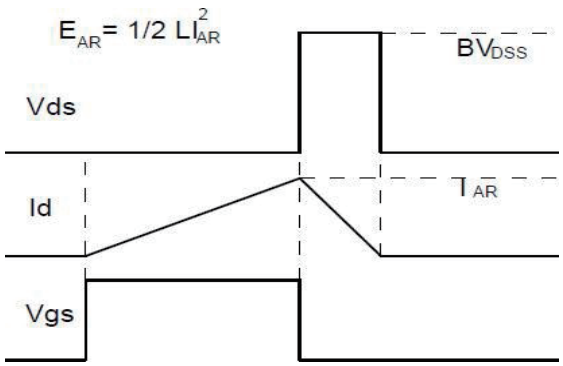
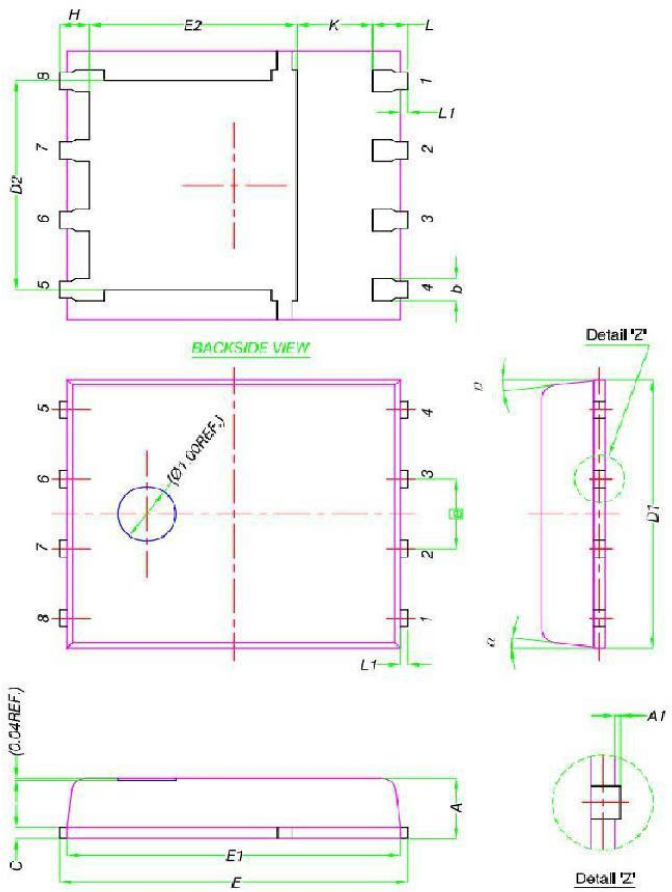


Fig.3-2 Avalanche waveform



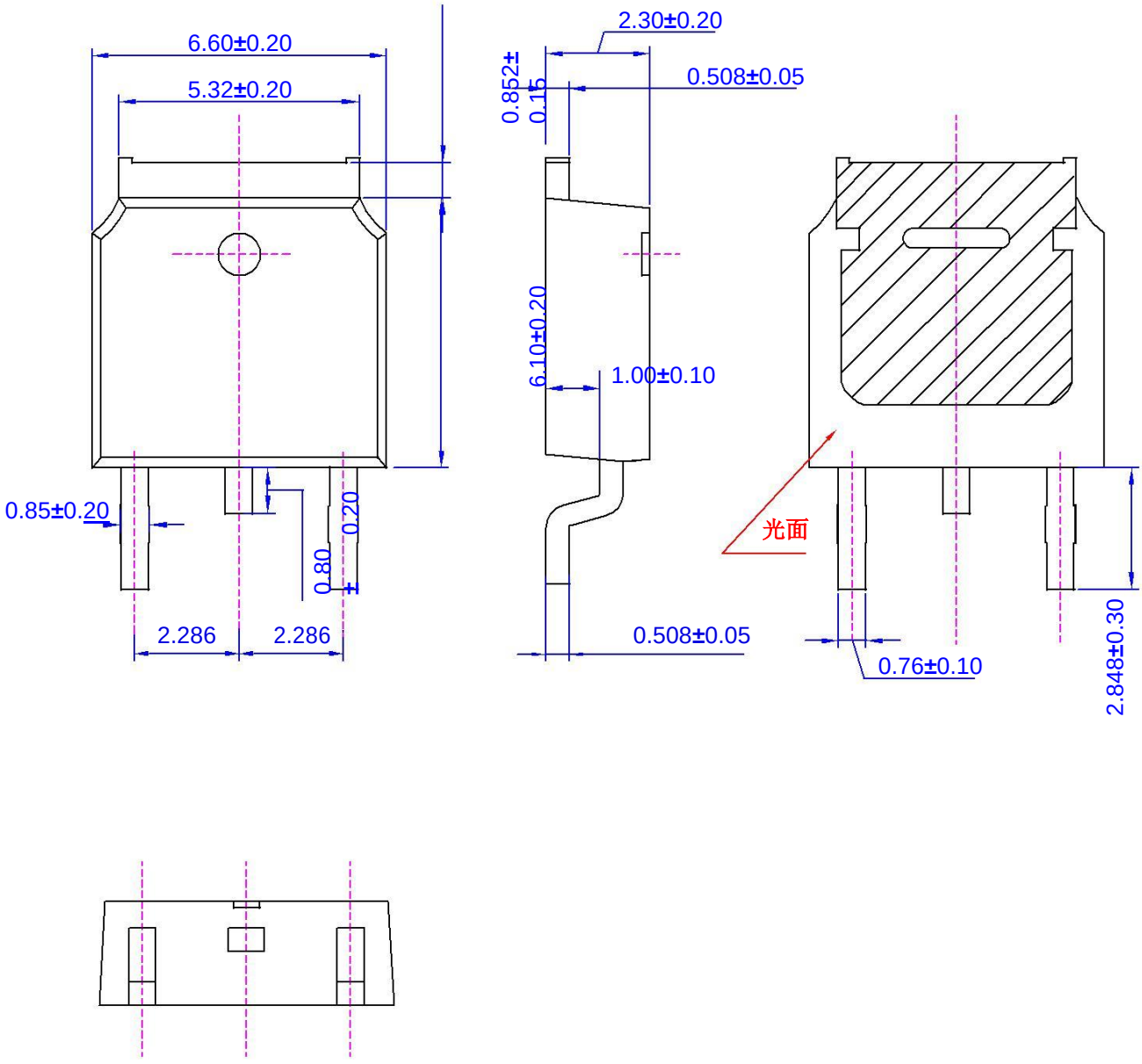
●Dimensions（DFN5×6）

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°

●Dimensions(TO-252)



注：

1.塑封体未标注为光面 Ra=0.1;亚光面 Ra=0.8

2.未注公差±0.15,未标注圆角 Rmax=0.25

3.塑封体无缺损、缩孔、裂纹、气泡等不良缺陷

4.标注单位 mm