● General Description

The CH07N04D 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

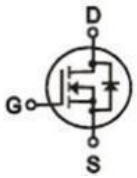
■MB/VGA Vcore

■SMPS 2nd Synchronous Rectifier

■POL application

■BLDC Motor driver

● Product Summary



V_{DS} =40V

$R_{DS(ON)}$ =7mΩ

I_D =40A

G D S

RoHS

TO-252

●Ordering Information:

Part NO.	CH07N04D
Marking	CH07N04D
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℃	40	A
	$I_{D@}$TC=75℃	30	A
	$I_{D@}$TC=100℃	30	A
Pulsed Drain Current	I_{DM}	40	A
Total Power Dissipation(TC=25℃)	P_D@TC=25℃	40	W
Total Power Dissipation(TA=100℃)	P_D@TC=100℃	20	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}	100	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=20A		6.0	7.0	mΩ
		VGS=4.5V, ID=16A		10	15	mΩ
Forward Transconductance	g_{FS}	V_{DS} =15V, I_D=10A		18		s
Source-drain voltage	V_{SD}	Is=20A			1.20	V

●Electronic Characteristics

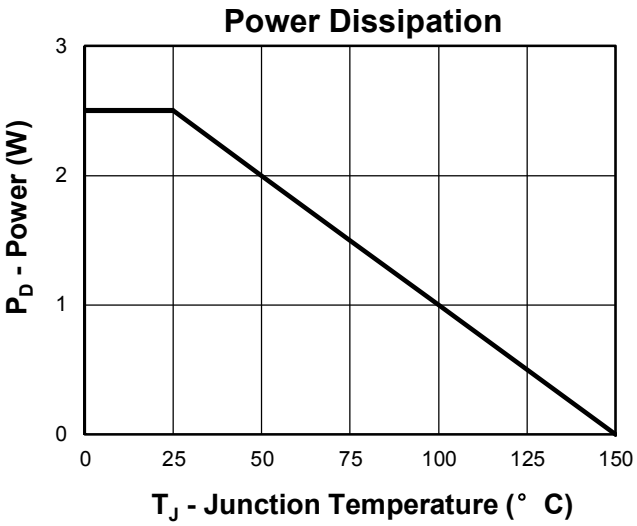
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Input capacitance	C_{iss}	f = 1MHz	-	590	-	pF
Output capacitance	C_{oss}		-	135	-	
Reverse transfer capacitance	C_{rss}		-	68	-	

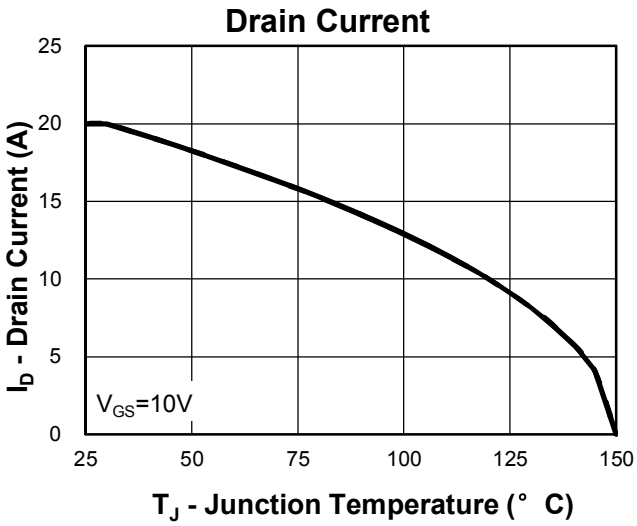
●Gate Charge characteristics(T_a = 25℃)

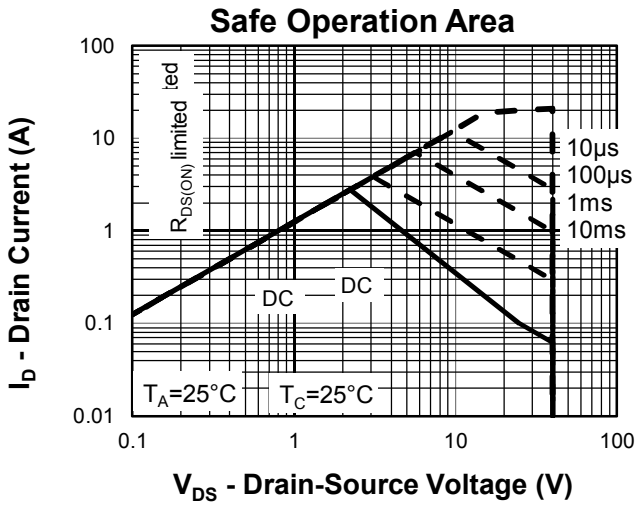
Parameter	Symbol	Condition	Min.	Typ	Max.	Unit
Total gate charge	Q_g	V_{DS} =32V	-	68	-	nC
Gate - Source charge	Q_{gs}	I_D = 20A	-	21	-	
Gate - Drain charge	Q_{gd}	V_{GS} = 10V	-	16	-	

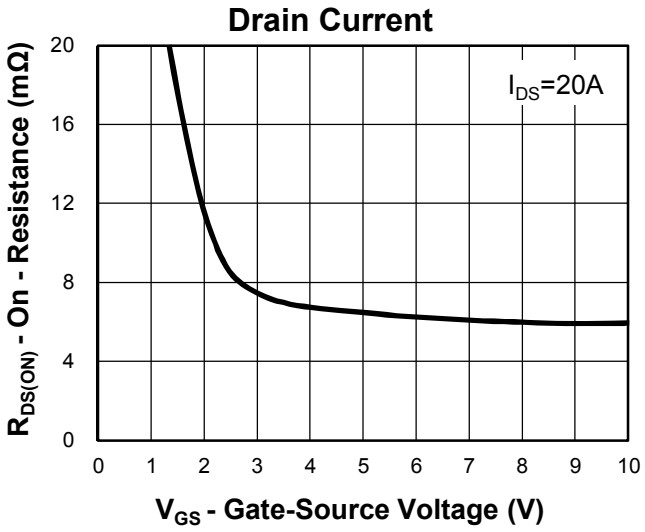
Note: ① Pulse Test : Pulse width ≤ 300μs, Duty cycle ≤ 2% ;

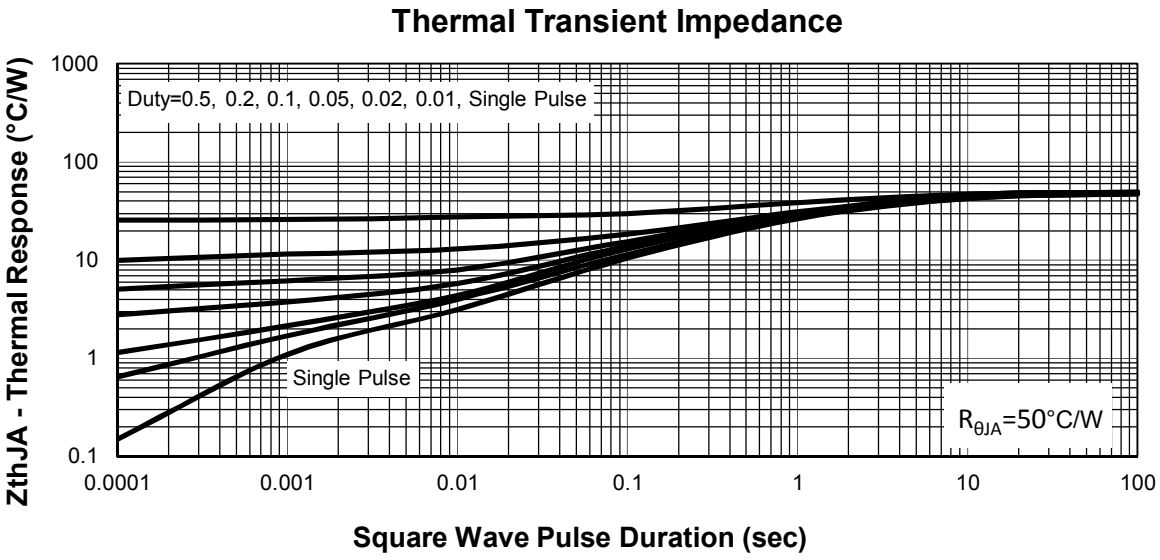
Typical Characteristics





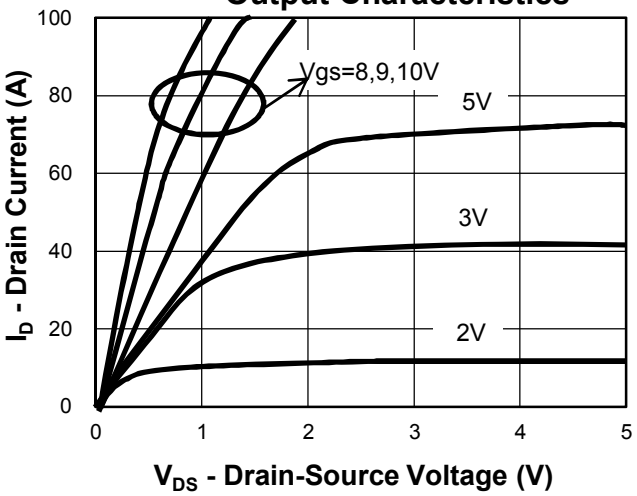




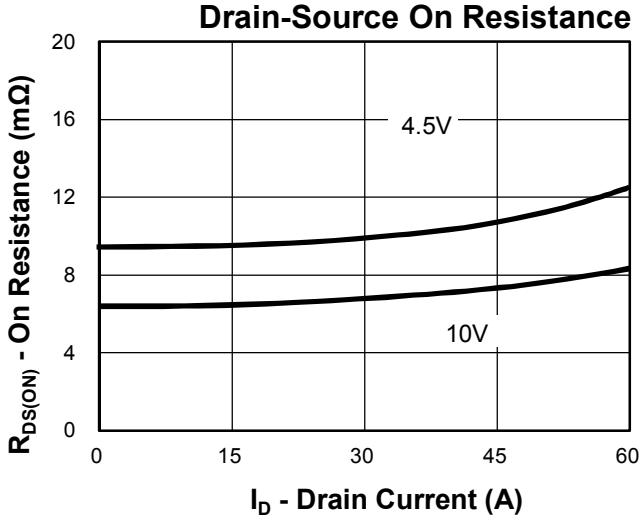


Typical Characteristics

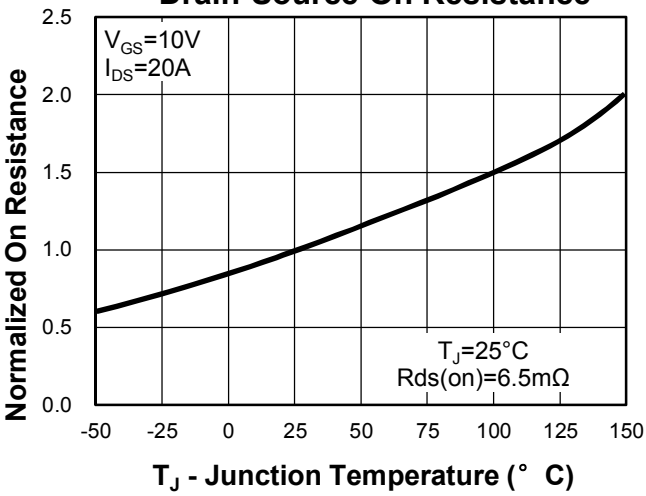
Output Characteristics



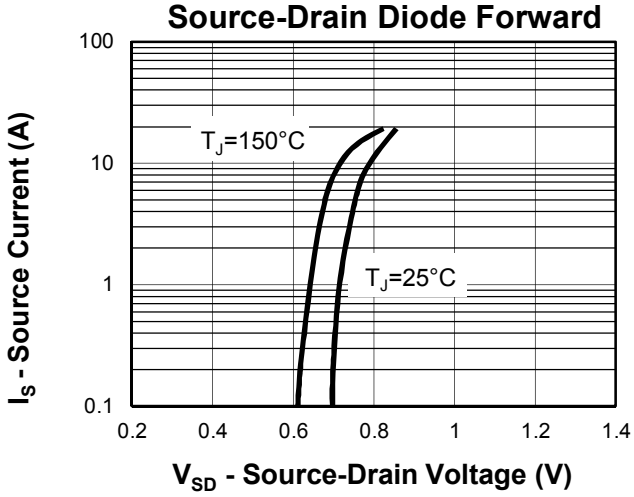
Drain-Source On Resistance



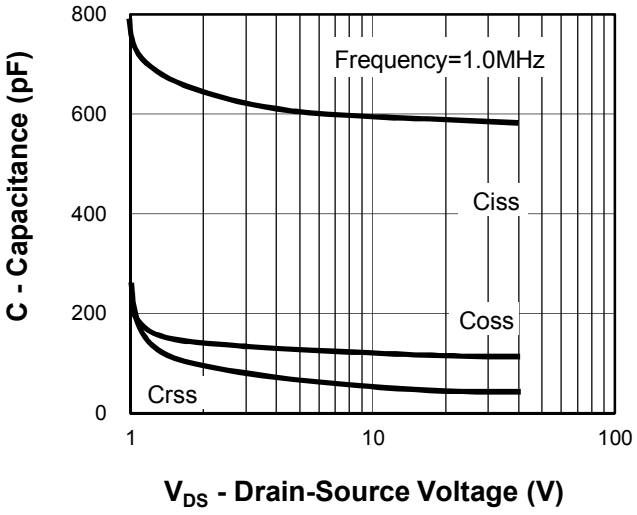
Drain-Source On Resistance



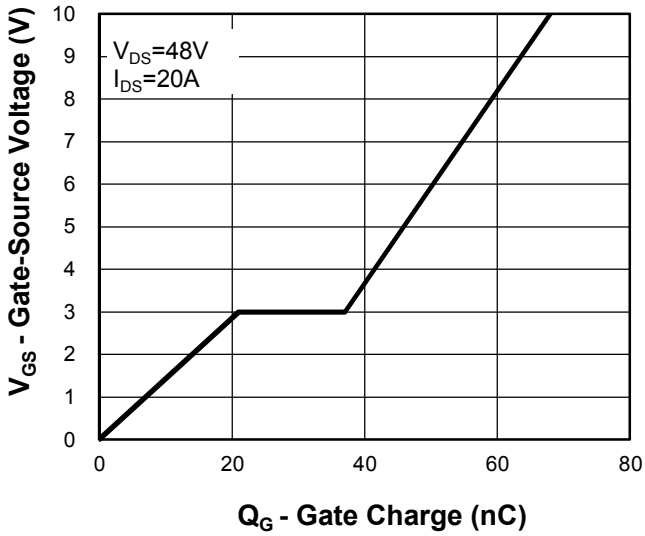
Source-Drain Diode Forward



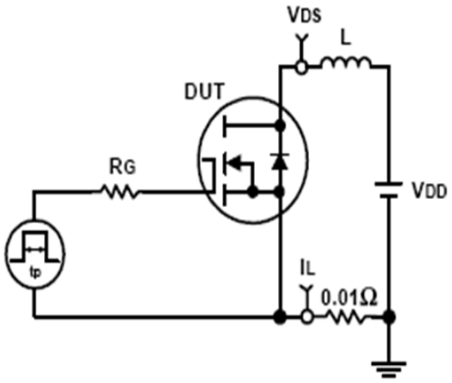
Capacitance

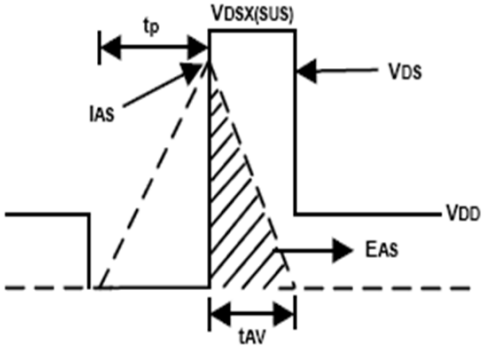


Gate Charge

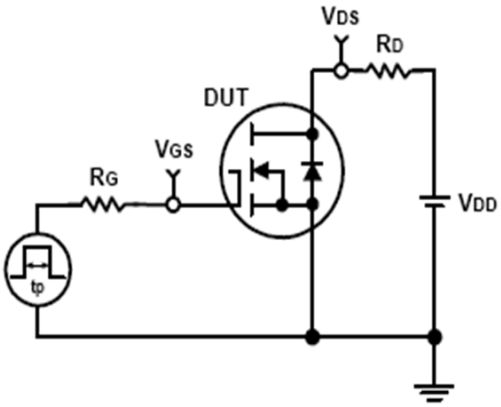


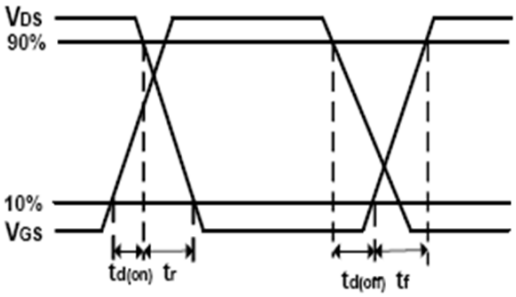
Avalanche Test Circuit and Waveforms



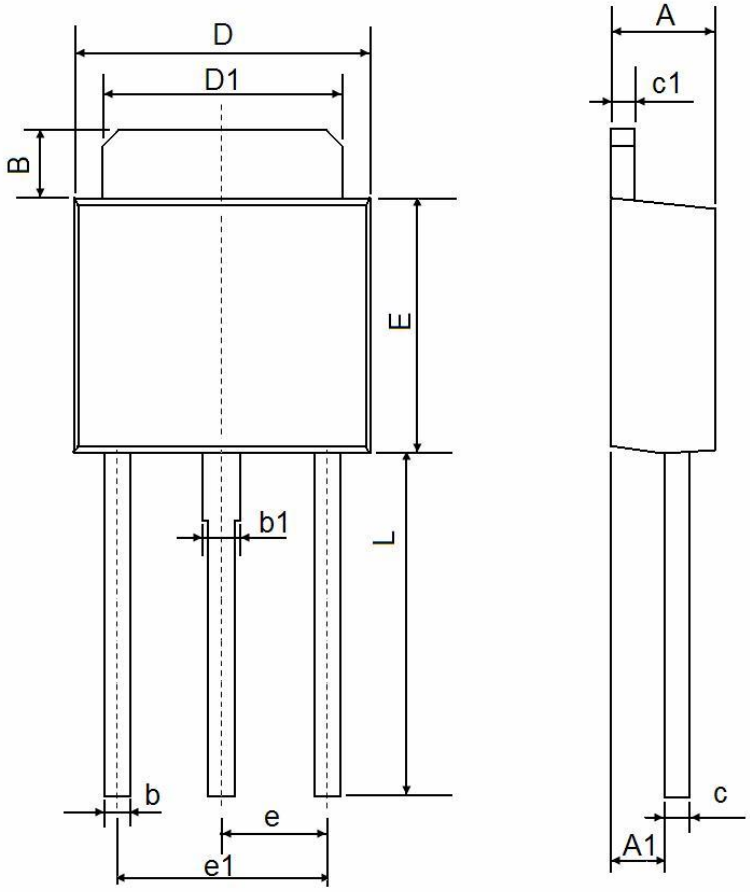


Switching Time Test Circuit and Waveforms



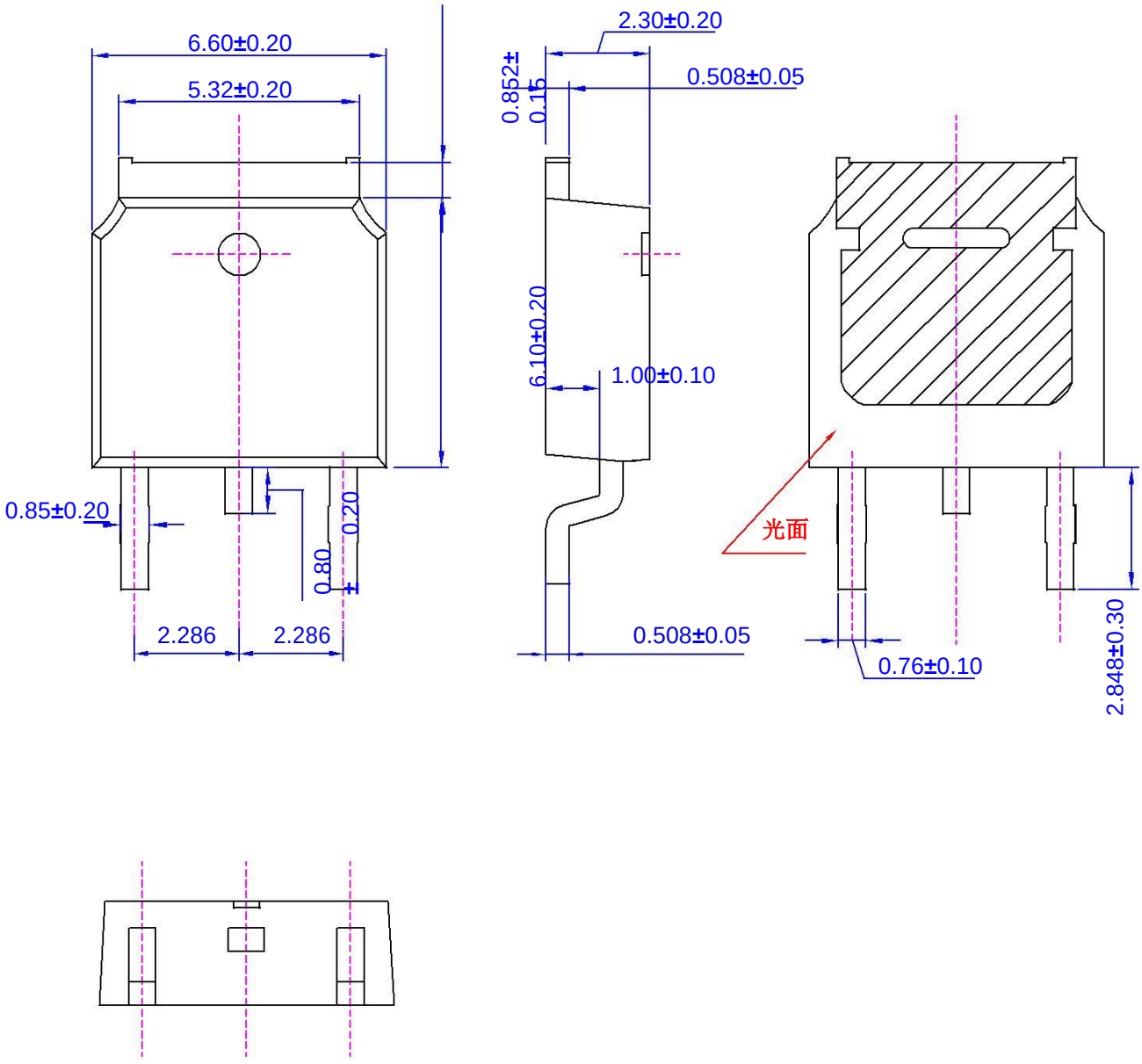


TO-251 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	1.050	1.350	0.042	0.054
B	1.350	1.650	0.053	0.065
b	0.500	0.700	0.020	0.028
b1	0.700	0.900	0.028	0.035
c	0.430	0.580	0.017	0.023
c1	0.430	0.580	0.017	0.023
D	6.350	6.650	0.250	0.262
D1	5.200	5.400	0.205	0.213
E	5.400	5.700	0.213	0.224
e	2.300 TYP.		0.091 TYP.	
e1	4.500	4.700	0.177	0.185
L	7.500	7.900	0.295	0.311

●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