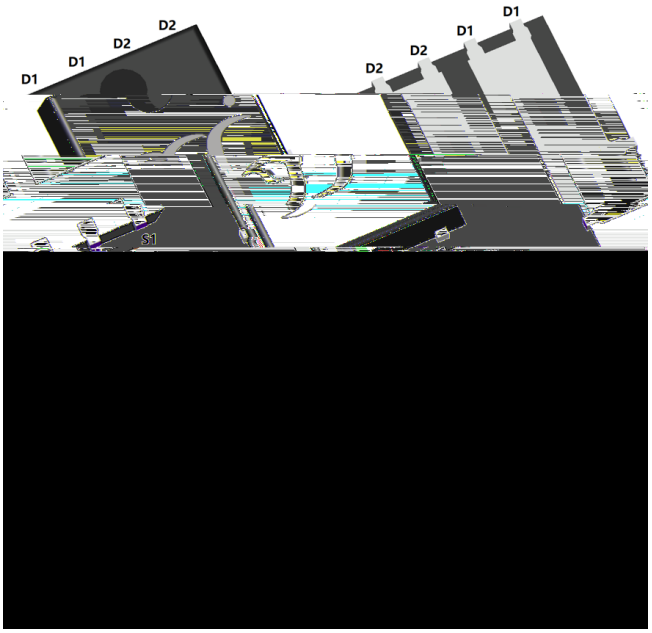
P-Channel and P-Channel Complementary MOSFET



Product Summary

V_{DS}	-100V
I_D	-17A
$R_{DS(ON)}$(at V_{GS}=-10V)	85m
$R_{DS(ON)}$(at V_{GS}=-4.5V)	105m
100% EAS Tested	
100% V_{DS} Tested	

General Description

Trench Power MOSFET technology
Excellent package for heat dissipation
High density cell design for low $R_{DS(ON)}$
Moisture Sensitivity Level 1
Epoxy Meets UL 94 V-0 Flammability Rating
Halogen Free

Applications

Power switching application
Uninterruptible power supply
DC-DC convertor

Absolute Maximum Ratings (T_J=25 unless otherwise noted)

Parameter			Symbol	Limit	Unit
Drain-source Voltage			V_{DS}	-100	V
Gate-source Voltage			V_{GS}	±20	V
Continuous Drain Current (Note 1,2)	Steady-State	T_A=25℃, V_{GS}= -10V	I_D	-3.4	A
		T_A=100℃, V_{GS}= -10V		-2.1	
Continuous Drain Current (Note 1,3)	Steady-State	T_C=25℃, V_{GS}= -10V		-17	
		T_C =100℃, V_{GS}= -10V		-10.7	
Pulsed Drain Current	T_C=25 , t_p=100μs		I_{DM}	-60	A
Avalanche energy	V_G=-10V, R_G , L=0.5mH, IAS=-16A		EAS	64	mJ
Total Power Dissipation (Note 1,2)	Steady-State	T_A=25℃	P_D	2	W
		T_A=100℃		0.8	
Total Power Dissipation (Note 1,3)	Steady-State	T_C=25℃		59	
		T_C =100℃		23	
Junction and Storage Temperature Range			T_J ,T_{STG}	-55 +150	℃

Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient (Note 2)	Steady-State	R	50	60	℃/W
Thermal Resistance Junction-to-Case	Steady-State	R	1.7	2.1	

Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJGD085P10A	F1	YJGD085P10A	5000	10000	100000	13 reel

Electrical Characteristics (T_J=25 unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=-	-100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-100V, V_{GS}=0V	-	-	-1	
		V_{DS}=-100V, V_{GS}=0V, Tj=150℃	-	-	-100	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V	-	-	±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-	-1.5	-2	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-10A	-	69	85	
		V_{GS}=-4.5V, I_D=-10A	-	77	105	
Diode Forward Voltage	V_{SD}	I_S=-10A, V_{GS}=0V	-	-	-1.2	V
Gate resistance	R_G	f=1MHz	-	10	-	
Maximum Body-Diode Continuous Current	I_S		-	-	-17	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-50V, V_{GS}=0V, f=1MHz	-	2110	-	pF
Output Capacitance	C_{oss}		-	90	-	
Reverse Transfer Capacitance	C_{rss}		-	70	-	
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-10V, V_{DS}=-50V, I_D=-10A	-	44.4	-	nC
Gate-Source Charge	Q_{gs}		-	4.7	-	
Gate-Drain Charge	Q_{gd}		-	5.5	-	
Reverse Recovery Charge	Q_{rr}	I_F=-10A, di/dt=100A/us	-	45	-	nC
Reverse Recovery Time	t_{rr}		-	30	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V, V_{DD}=-50V, I_D=-10A R_{GEN}=3	-	9	-	ns
Turn-on Rise Time	t_r		-	42	-	
Turn-off Delay Time	$t_{D(off)}$		-	91	-	
Turn-off fall Time	t_f		-	31	-	

Note

1. The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
2. The value of R is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in^2 pad of 2oz. Copper, in the still air environment with TA =25 .The maximum allowed junction temperature of 150 . The value in any given application depends on the user's specific board design.
3. Thermal resistance from junction to soldering point (on the exposed drain pad).

Typical Electrical and Thermal Characteristics Diagrams

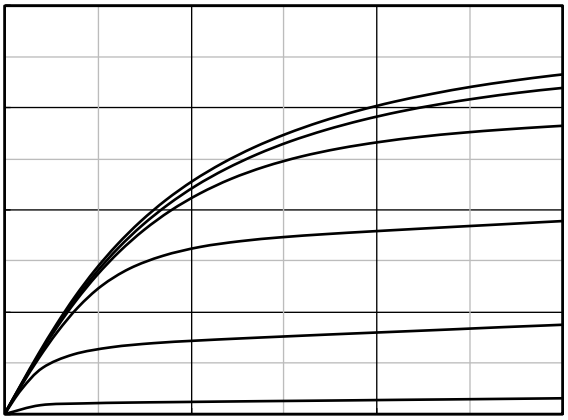


Figure 1. Output Characteristics

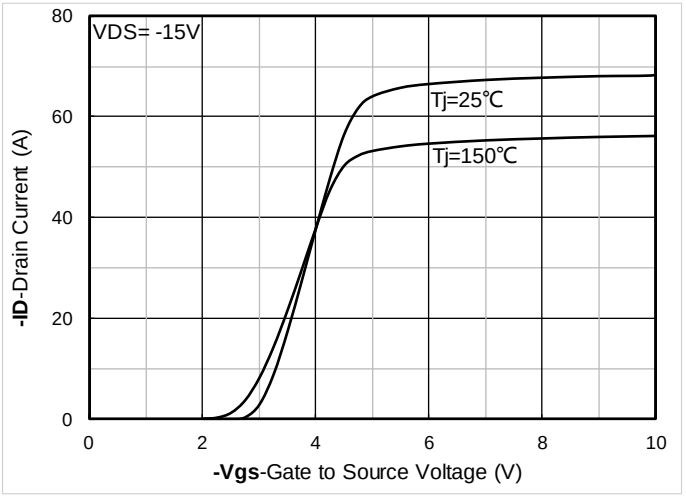


Figure 2. Transfer Characteristics

Figure 3. Capacitance Characteristics

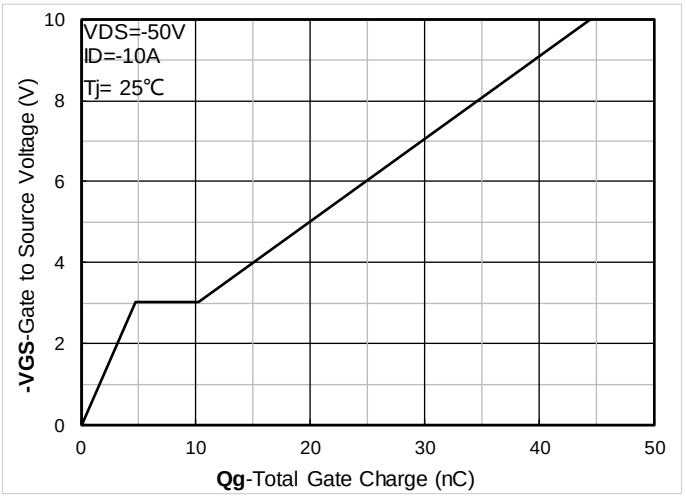


Figure 4. Gate Charge

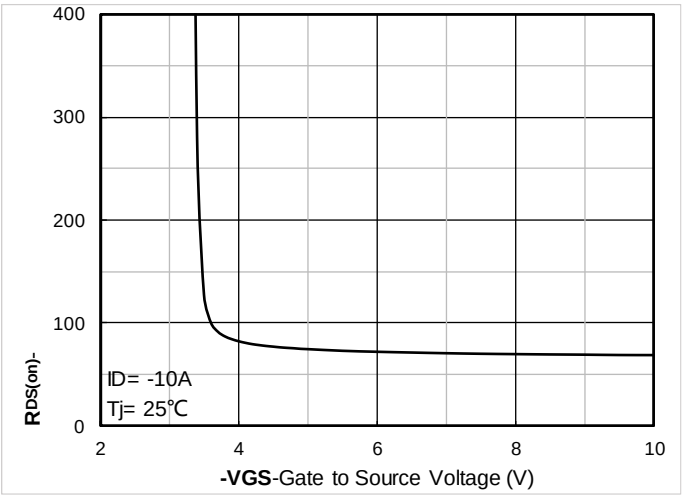


Figure 5. On-Resistance vs Gate to Source Voltage

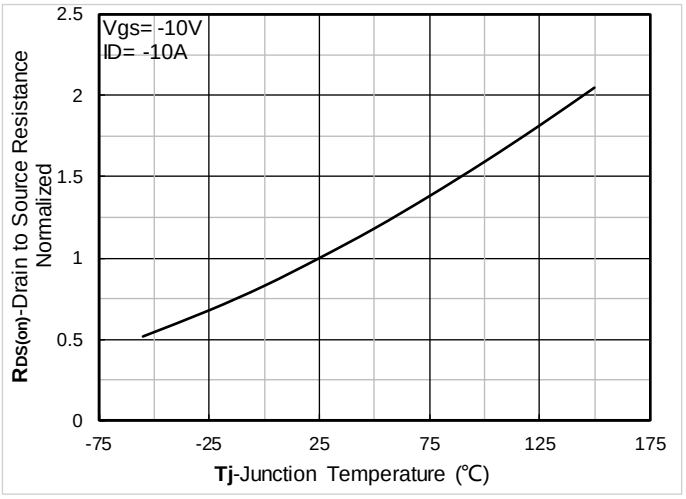


Figure 6. Normalized On-Resistance

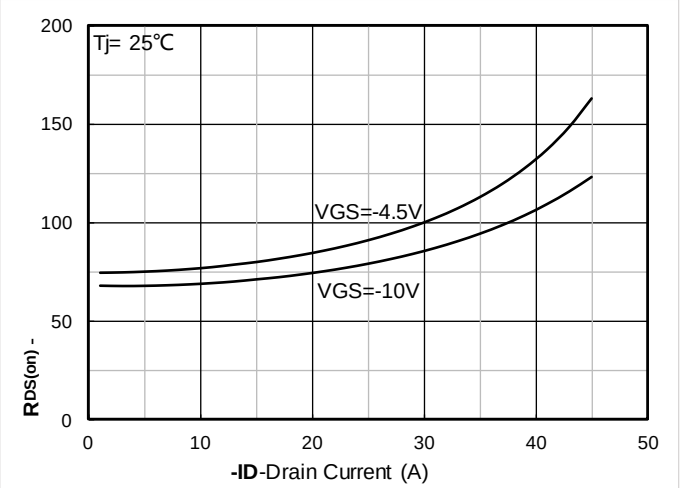


Figure 7. $R_{DS(on)}$ VS Drain Current

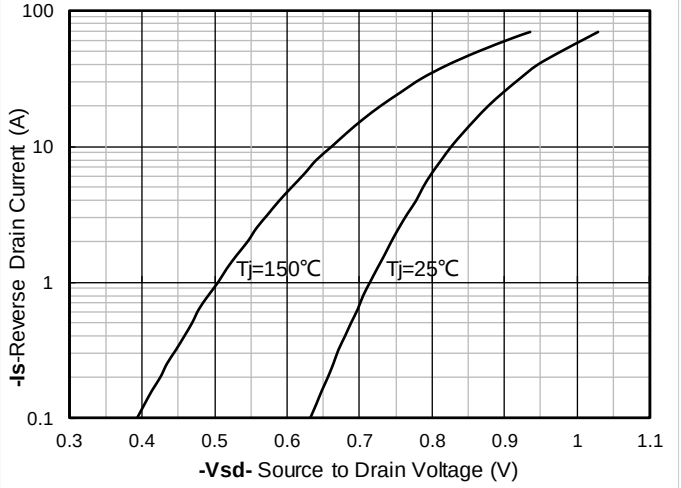


Figure 8. Forward characteristics of reverse diode

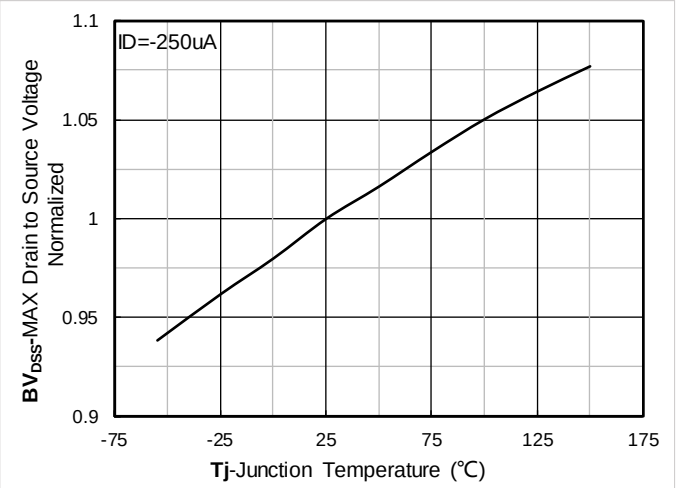


Figure 9. Normalized breakdown voltage

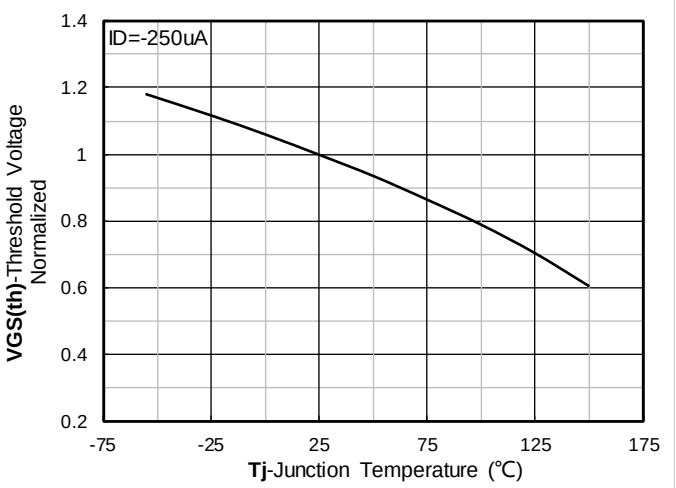


Figure 10. Normalized Threshold voltage

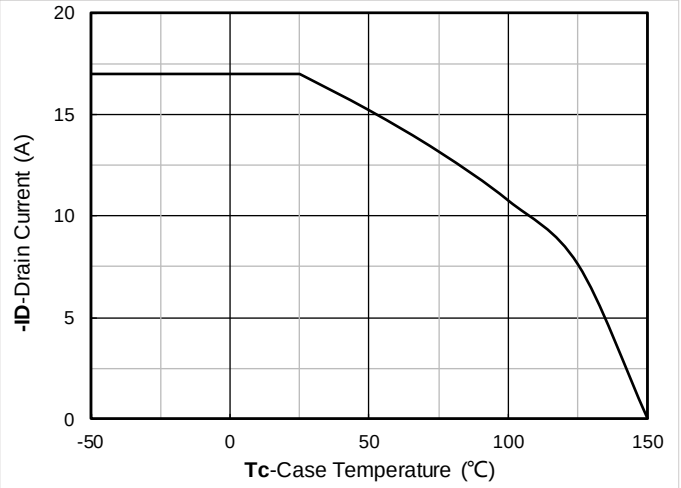


Figure 11. Current dissipation

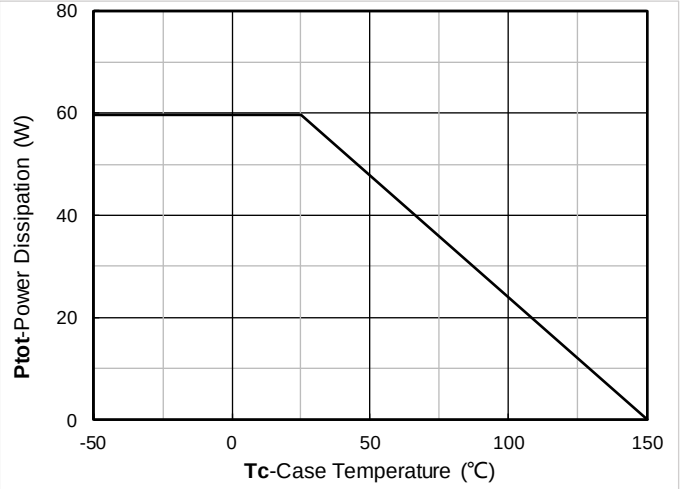


Figure 12. Power dissipation

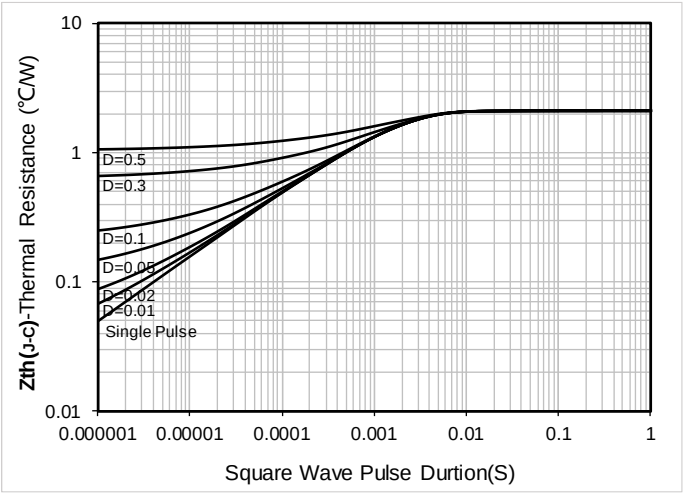


Figure 13. Maximum Transient Thermal Impedance

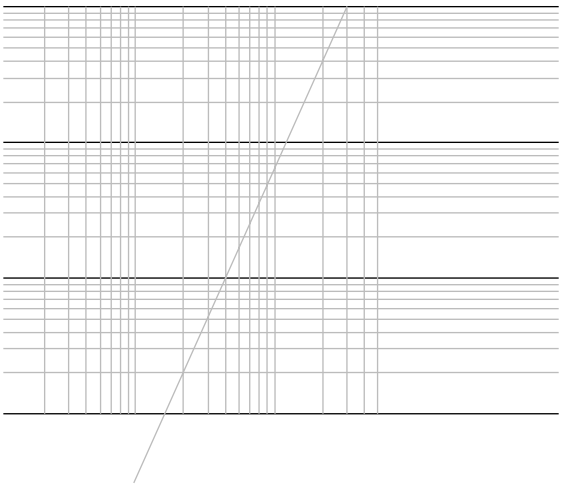
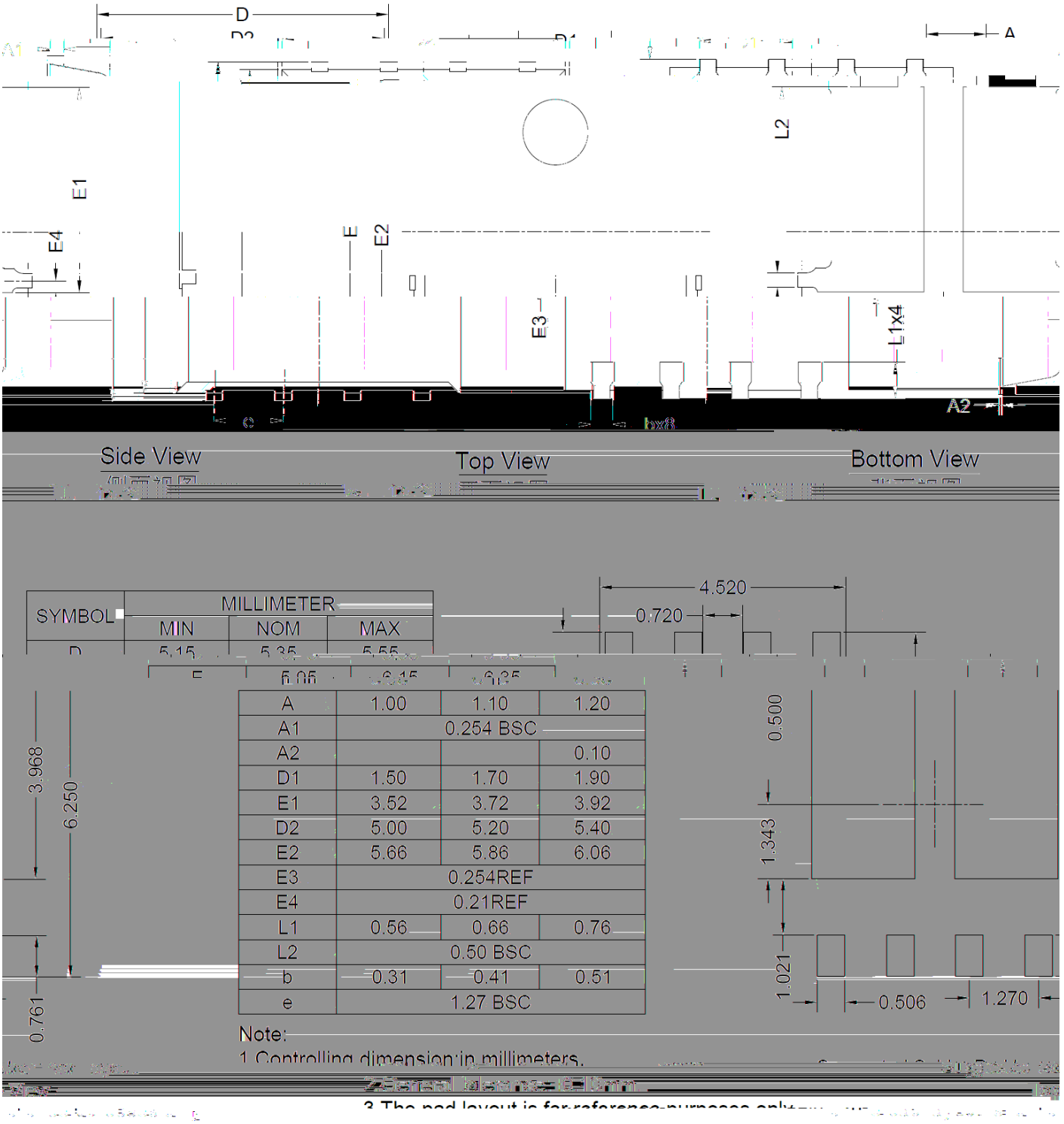


Figure 14. Safe Operation Area

PDFN5060-8L-E-1.1mm Package information



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.00	1.10	1.20
A1		0.254 BSC	
A2			0.10
D1	1.50	1.70	1.90
E1	3.52	3.72	3.92
D2	5.00	5.20	5.40
E2	5.66	5.86	6.06
E3		0.254REF	
E4		0.21REF	
L1	0.56	0.66	0.76
L2		0.50 BSC	
b	0.31	0.41	0.51
e		1.27 BSC	

Note:
1 Controlling dimension in millimeters.

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