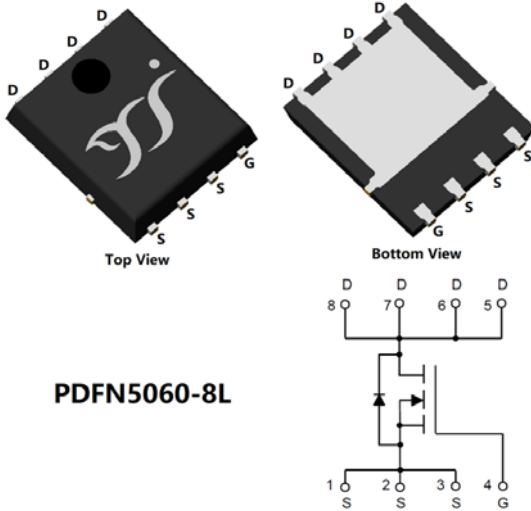


N-Channel Enhancement Mode Field Effect Transistor



PDFN5060-8L

Product Summary

- V_{DS} 60V
- I_D 95A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) 3.8mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) 4.5mohm
- 100% EAS Tested
- 100% ∇V_{DS} Tested

General Description

- Split gate trench MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$
- Part no. with suffix "Q" means AEC-Q101 qualified

Applications

- High Frequency Switching
- Synchronous Rectification
- 12V and 24V Automotive systems

■ Absolute Maximum Ratings ($T_A=25$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_C=25^\circ C$	I_D	95	A
	$T_C=100^\circ C$		60	
Pulsed Drain Current ^A		I_{DM}	390	A
Avalanche energy ^B		EAS	1200	mJ
Total Power Dissipation ^C	$T_C=25^\circ C$	P_D	113	W
	$T_C=100^\circ C$		45	
Junction and Storage Temperature Range		T_J, T_{STG}	-55 +150	$^\circ C$

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	Steady-State	$R_{\theta JA}$	38	50	$^\circ C/W$
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	0.9	1.1	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG95G06AQ	F1	YJG95G06A	5000	10000	100000	13" reel



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■ 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 =250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
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 =250μA	1.2	1.7	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		2.9	3.8	mΩ
		V _{GS} =4.5V, I _D =15A		3.2	4.5	mΩ
Diode Forward Voltage	V _{SD}	I _S =20A, V _{GS} =0V			1.2	V
Gate resistance	R _G	f=1MHz		2		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1MHZ		5300		pF
Output Capacitance	C _{oss}			1500		
Reverse Transfer Capacitance	C _{rss}			70		
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =10V, V _{DS} =30V, I _D =45A		85		nC
Gate-Source Charge	Q _{gs}			23		
Gate-Drain Charge	Q _{gd}			9.3		
Reverse Recovery Chrage	Q _{rr}	I _S =45A, di/dt=100A/us,		61		
Reverse Recovery Time	t _{rr}			54		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DS} =30V, I _D =45A R _{GEN} =3Ω		18.5		ns
Turn-on Rise Time	t _r			87		
Turn-off Delay Time	t _{D(off)}			64		
Turn-off fall Time	t _f			107		

A. Repetitive rating; pulse width limited by max. junction temperature.

B. V_{DD}=50V, R_G=25Ω, L=6mH, I_{AS}=20A

C. P_d is based on max. junction temperature, using junction-case thermal resistance.

D. The value of R_{θJA} is measured with the device mounted on the minimum recommend pad size, in the still air environment with T_A=25 . The maximum allowed junction temperature of 150 . The value in any given application depends on the user's specific board design.



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■ Typical Performance Characteristics

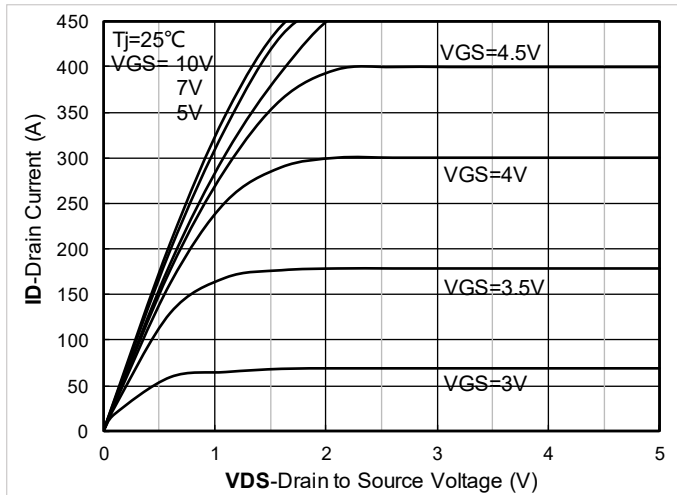


Figure 1. Output Characteristics

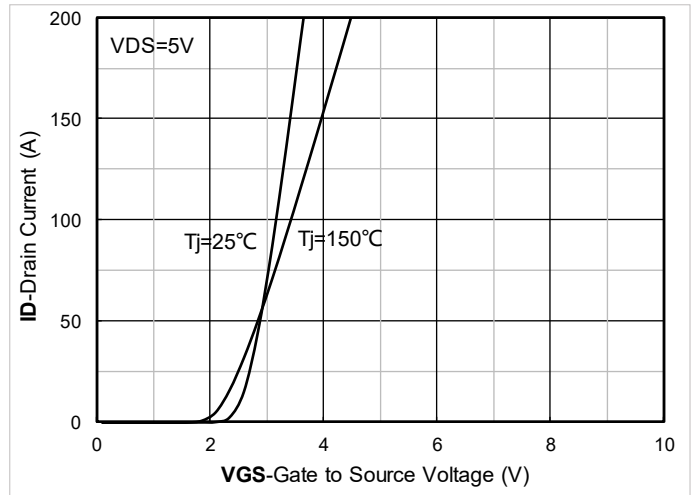


Figure 2. Transfer Characteristics

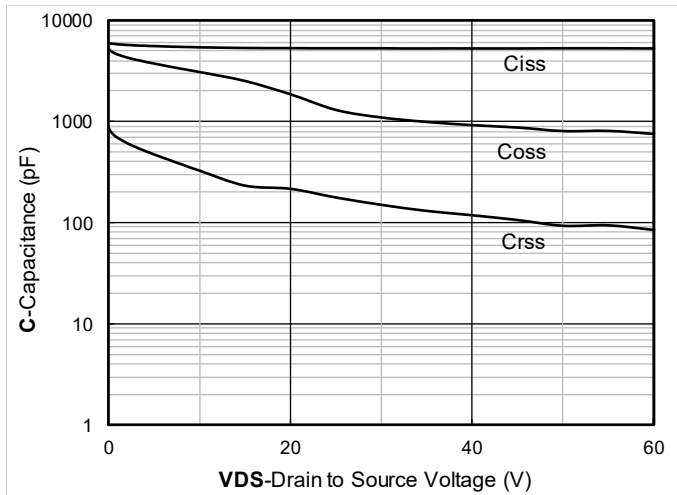


Figure 3. Capacitance Characteristics

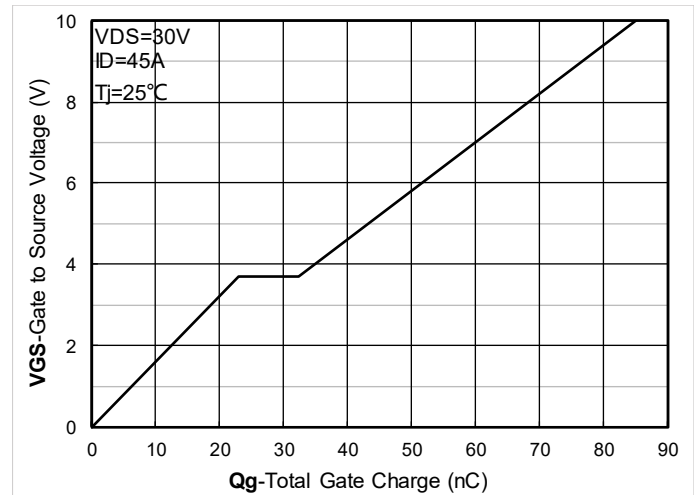


Figure 4. Gate Charge

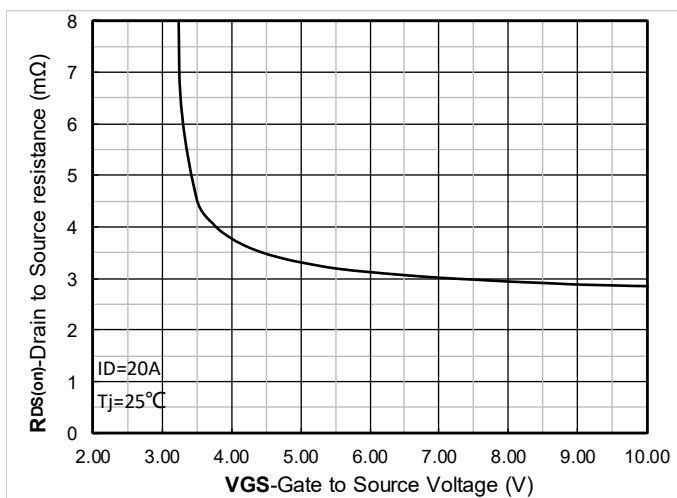


Figure 5. On-Resistance vs Gate to Source Voltage

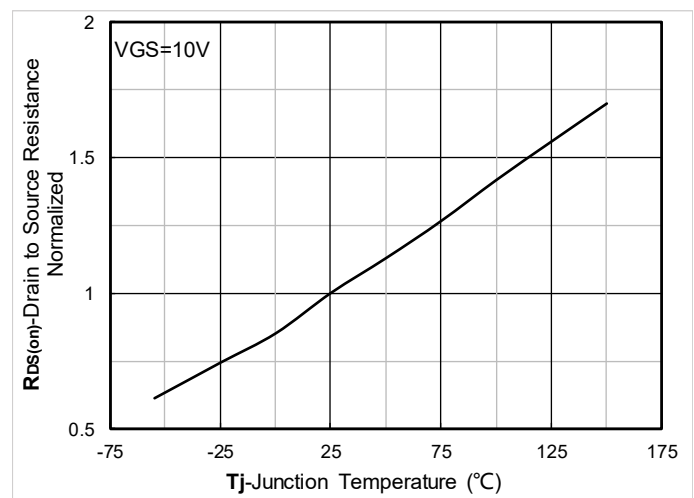


Figure 6. Normalized On-Resistance



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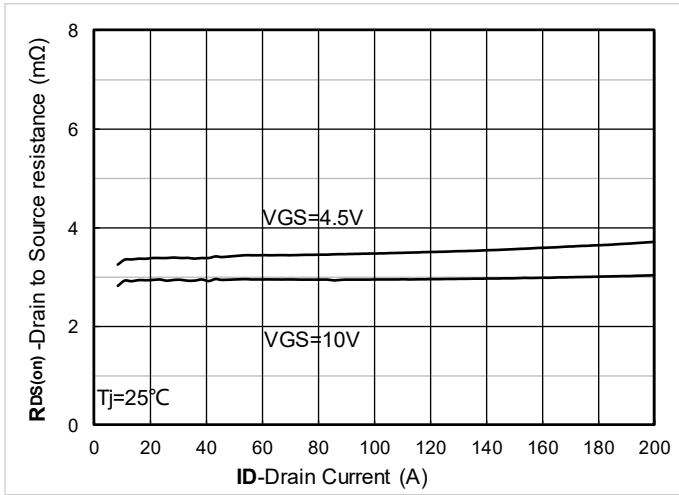


Figure 7. $R_{DS(on)}$ VS Drain Current

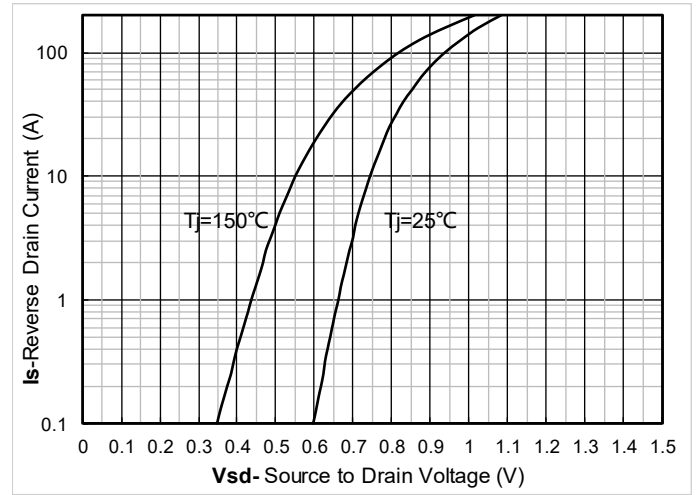


Figure 8. Forward characteristics of reverse diode

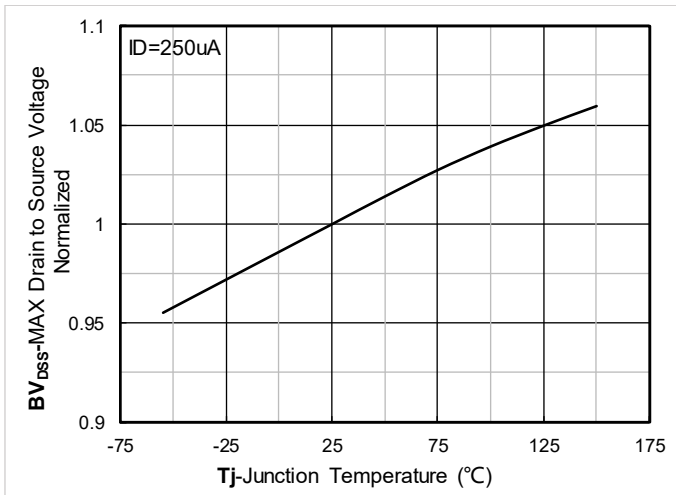


Figure 9. Normalized breakdown voltage

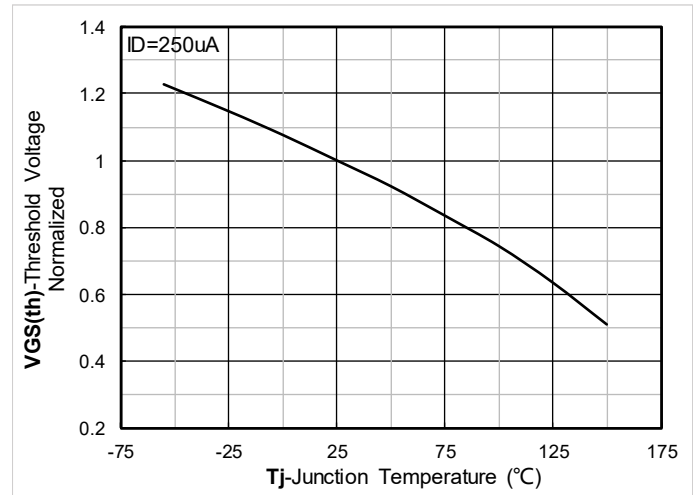


Figure 10. Normalized Threshold voltage

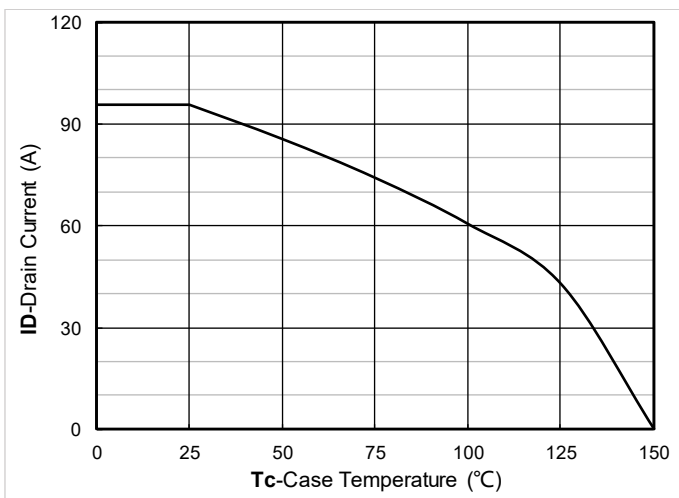


Figure 11. Current dissipation

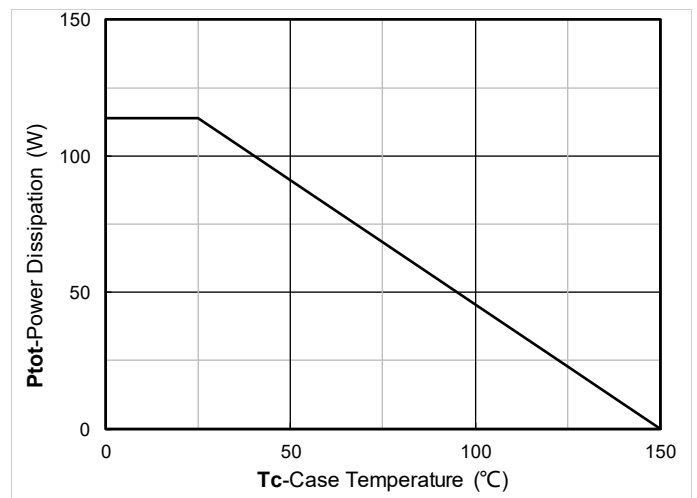


Figure 12. Power dissipation



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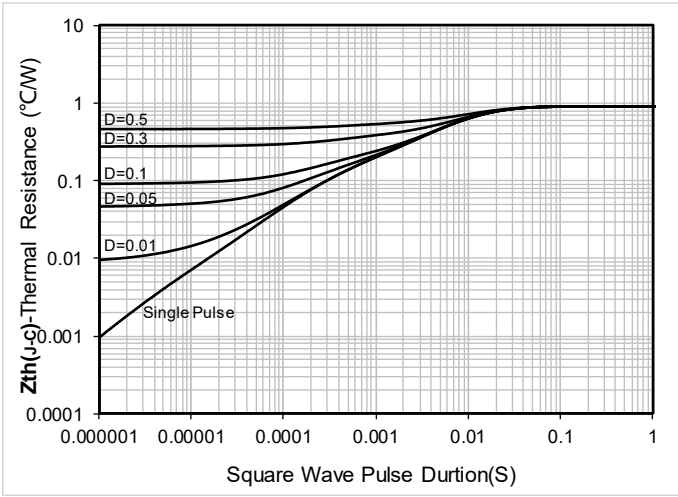


Figure 13. Maximum Transient Thermal Impedance

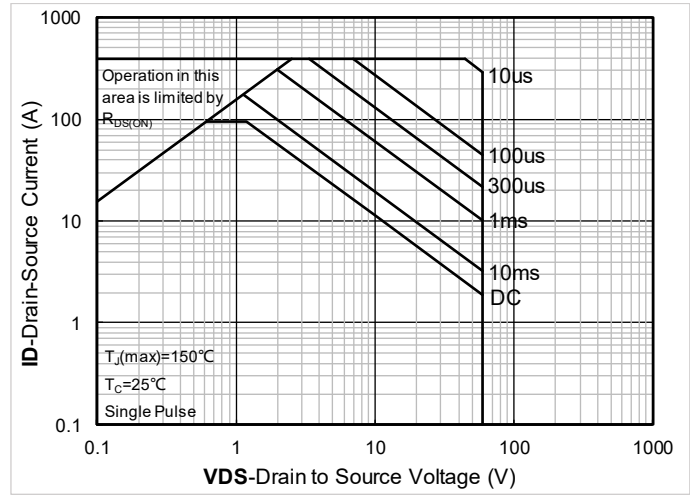
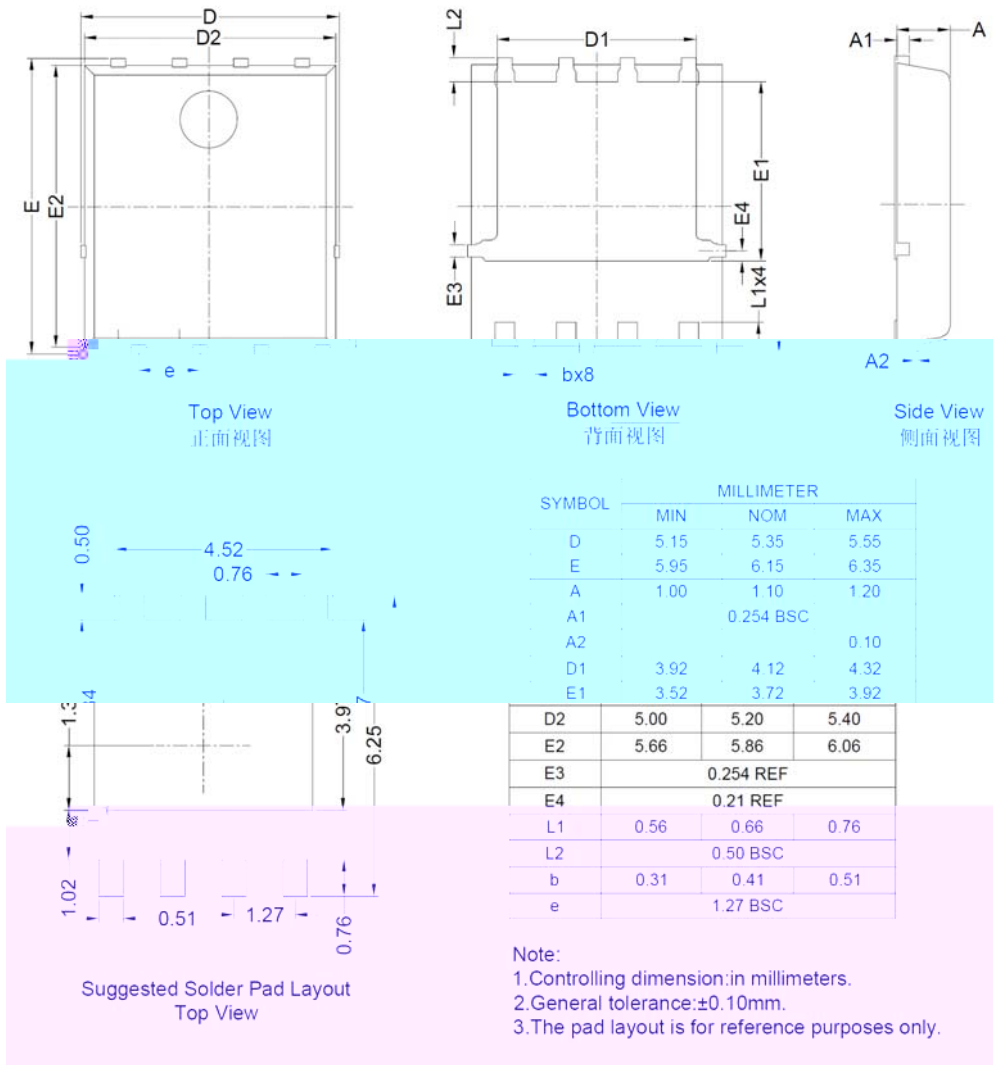


Figure 14. Safe Operation Area



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■ PDFN5060 Package information





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