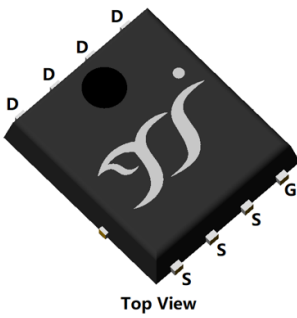
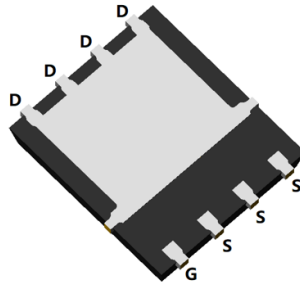


P-Channel Enhancement Mode Field Effect Transistor

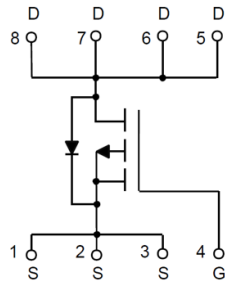


Top View



Bottom View

PDFN5060-8L



Product Summary

- V_{DS} -100V
- I_D -15A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <110 mohm
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <120 mohm
- 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 $R_{DS(ON)}$
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- DC-DC Converters
- Power management functions

■ Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-100	V
Gate-source Voltage		V_{GS}	± 20	V
Drain Current	$T_A=25^\circ\text{C}$	I_D	-3	A
	$T_A=100^\circ\text{C}$		-2	
	$T_C=25^\circ\text{C}$		-15	
	$T_C=100^\circ\text{C}$		-9.6	
Pulsed Drain Current ^A		I_{DM}	-30	A
Avalanche energy ^B		EAS	64	mJ
Total Power Dissipation ^C	$T_A=25^\circ\text{C}$	P_D	2.5	W
	$T_A=100^\circ\text{C}$		1	
	$T_C=25^\circ\text{C}$		60	
	$T_C=100^\circ\text{C}$		24	
Junction and Storage Temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$

■ Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient ^D	$t \leq 10\text{S}$	$R_{\theta JA}$	15	20	$^\circ\text{C/W}$
Thermal Resistance Junction-to-Ambient ^D	Steady-State		40	50	
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	1.7	2.1	

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJG15GP10A	F1	YJG15GP10A	5000	10000	100000	13" reel



YJG15GP10A

■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	-100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-100V, V _{GS} =0V	T _J =25°C		-1	μA
			T _J =55°C		-5	
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	-1.0	-1.8	-2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = -10V, I _D =-15A		83	110	mΩ
		V _{GS} = -4.5V, I _D =-7A		95	120	
Diode Forward Voltage	V _{SD}	I _S =-15A, V _{GS} =0V			-1.3	V
Gate resistance	R _G	f=1MHz, Open drain	-	10	-	Ω
Maximum Body-Diode Continuous Current	I _S				-15	A
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-50V, V _{GS} =0V, f=1MHZ		1051		pF
Output Capacitance	C _{oss}			119		
Reverse Transfer Capacitance	C _{rss}			25		
Switching Parameters						
Total Gate Charge	Q _{g(-10V)}	V _{GS} =-10V, V _{DS} =-50V, I _D =-5A		20.1		nC
Total Gate Charge	Q _{g(-4.5V)}			9.7		
Gate-Source Charge	Q _{gs}			3.9		
Gate-Drain Charge	Q _{gd}			4.3		
Reverse Recovery Charge	Q _{rr}	I _F =-5A, di/dt=100A/us		140		nC
Reverse Recovery Time	t _{rr}			80		
Turn-on Delay Time	t _{D(on)}	V _{GS} =-10V, V _{DD} =-50V, I _{DS} =-5A R _{GEN} =6Ω		10		ns
Turn-on Rise Time	t _r			30		
Turn-off Delay Time	t _{D(off)}			77		
Turn-off fall Time	t _f			81		

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

B. T_J=25°C, V_{DD}=-50V, V_G=-10V, R_G=25Ω, L=0.5mH, I_{AS}=-16A.

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

D. The value of RθJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25° C. The Power dissipation PDSM is based on RθJA ≤ 10s and the maximum allowed junction temperature of 150° C. The value in any given application depends on the user's specific board design.



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■ Typical Performance Characteristics

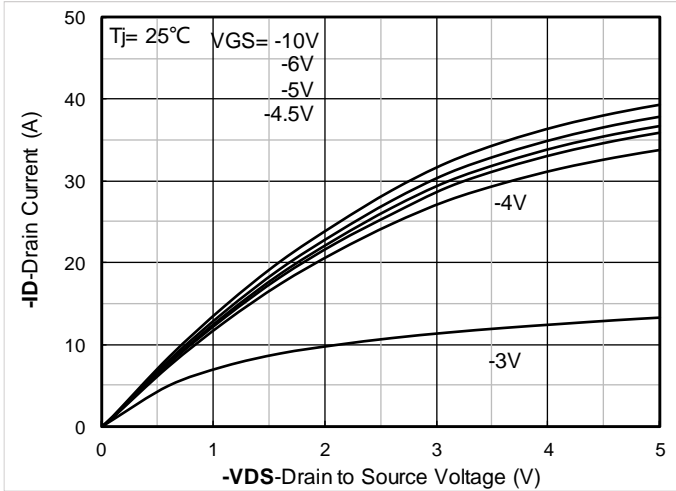


Figure1. Output Characteristics

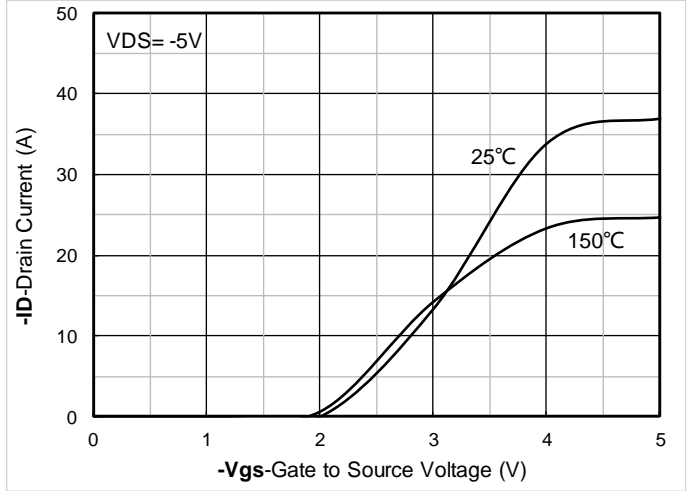


Figure2. Transfer Characteristics

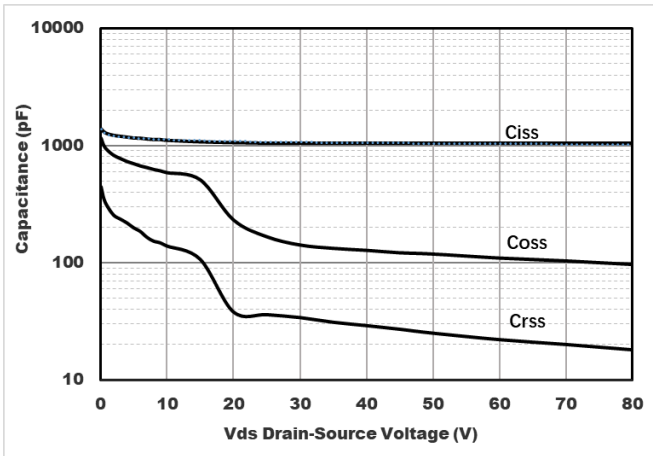


Figure3. Capacitance Characteristics

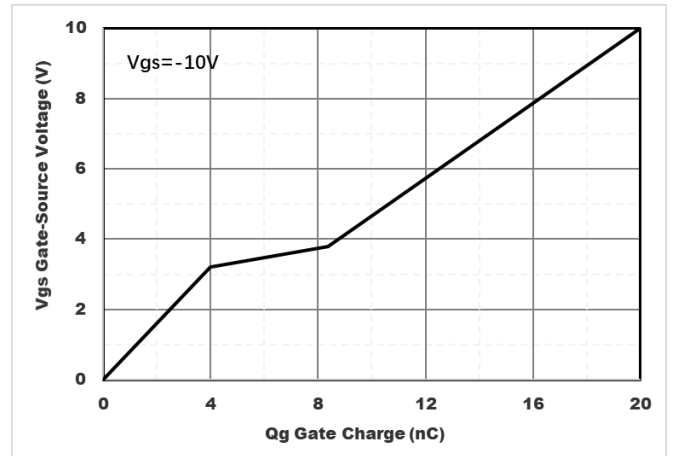


Figure4. Gate Charge

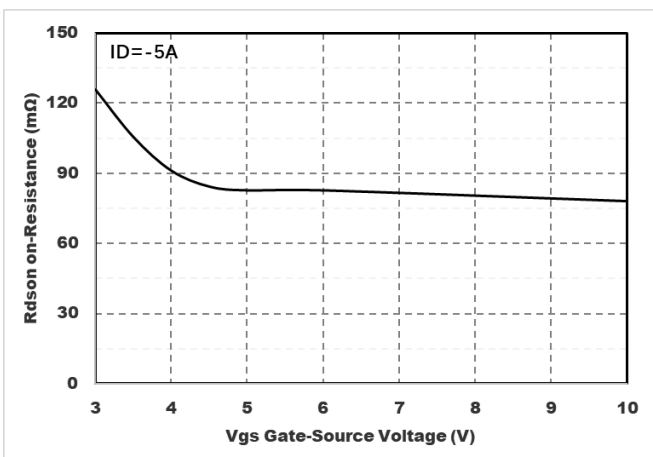


Figure5. : On-Resistance vs. Gate to Source Voltage

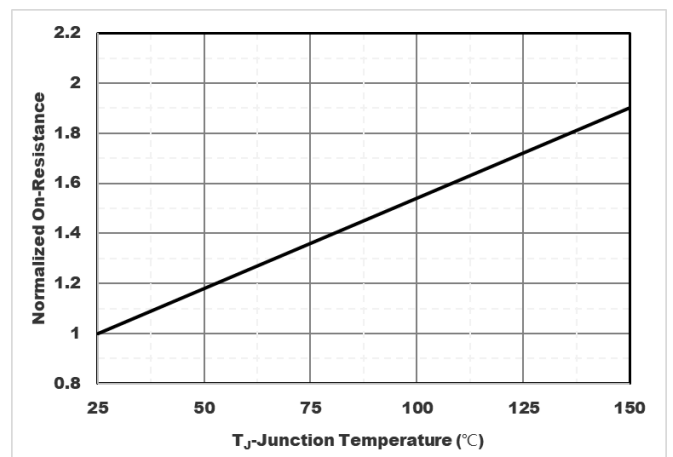


Figure6. Normalized On-Resistance



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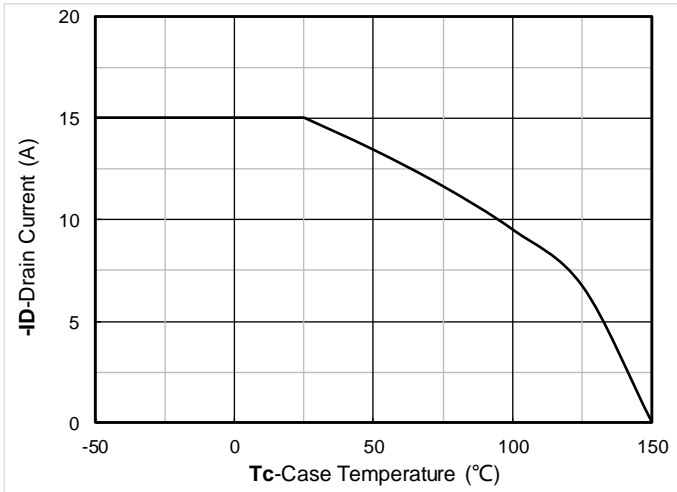


Figure7. Drain current

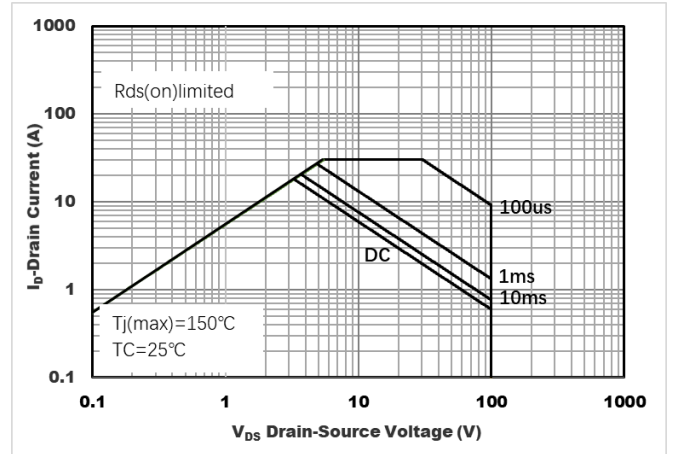


Figure8. Safe Operation Area

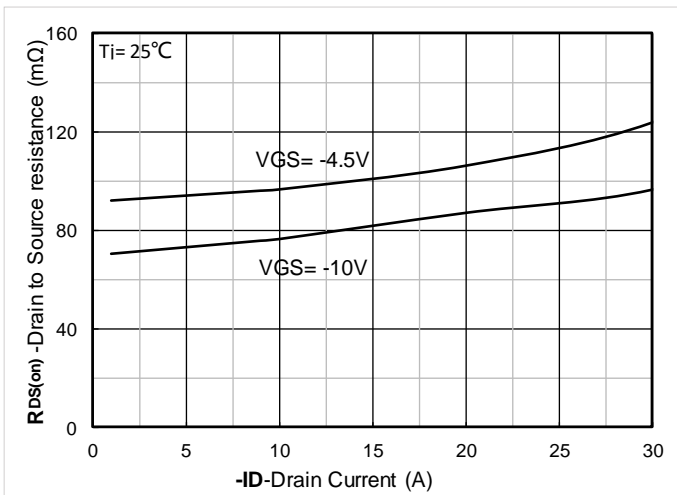


Figure 9. RDS(on) VS Drain Current

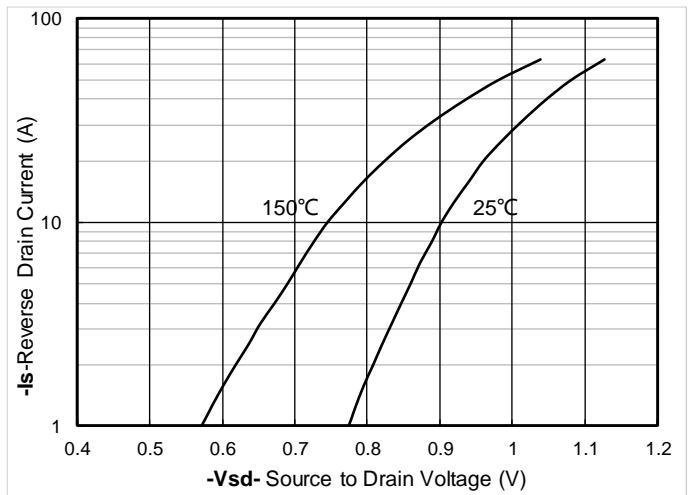


Figure 10. Forward characteristics of reverse diode

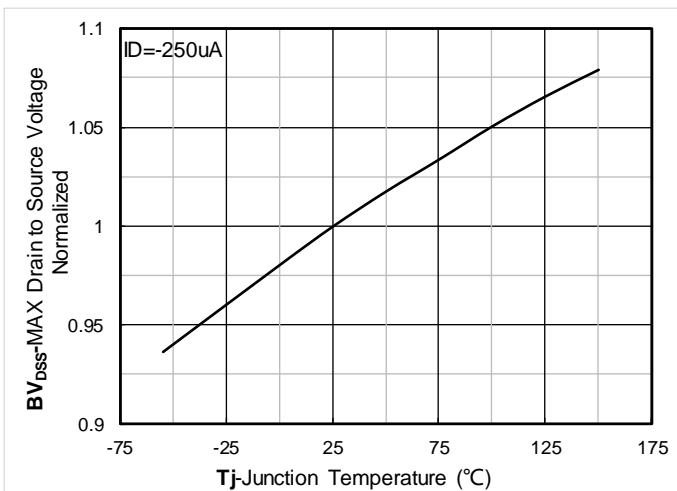


Figure 11. Normalized breakdown voltage

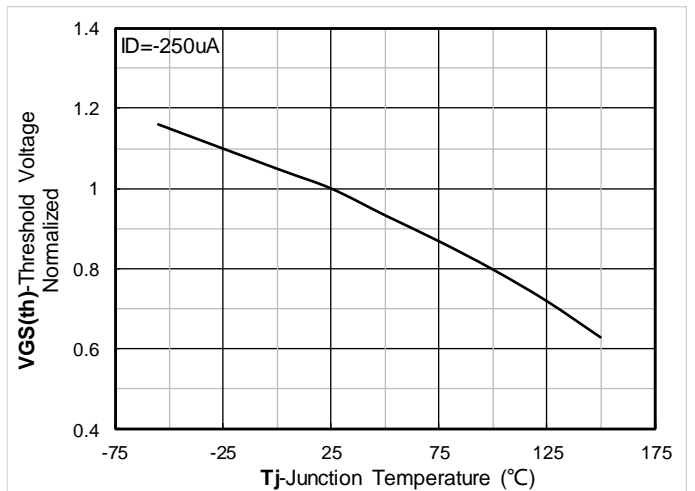


Figure 12. Normalized Threshold voltage



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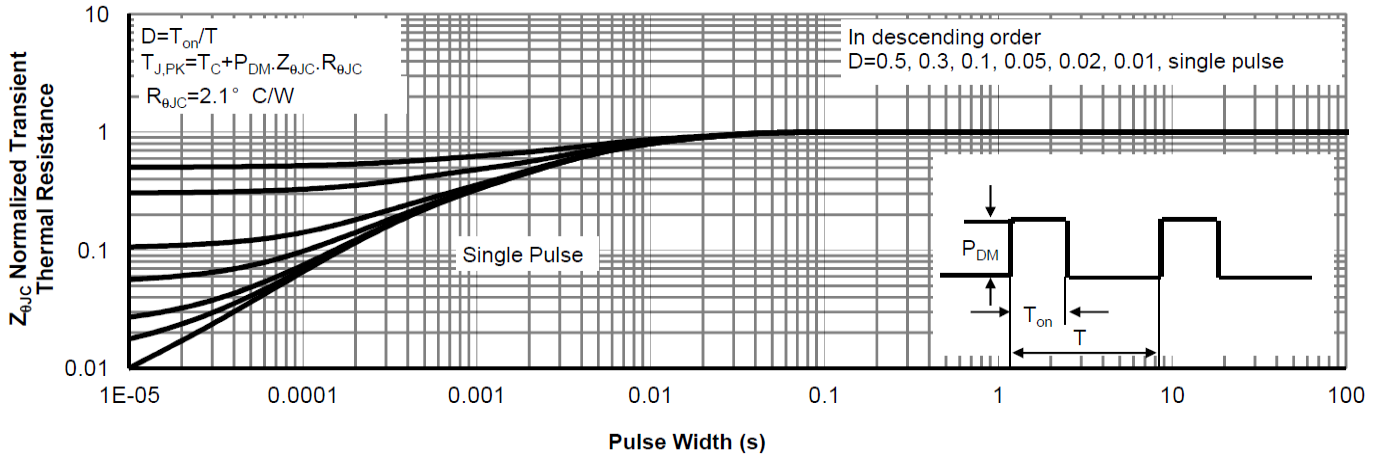
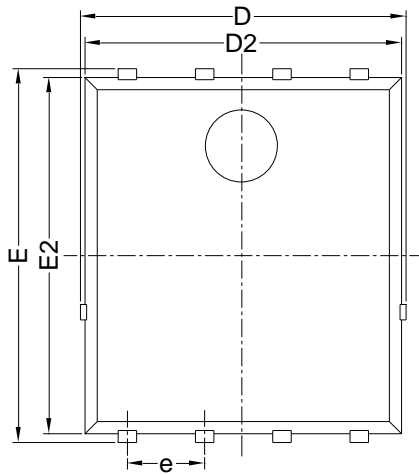


Figure13.Normalized Maximum Transient thermal impedance

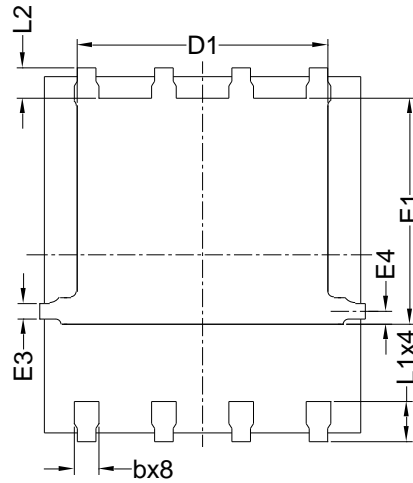


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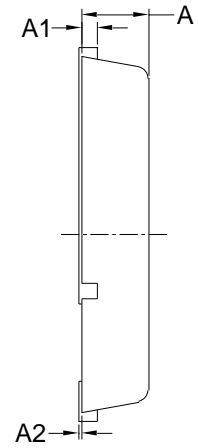
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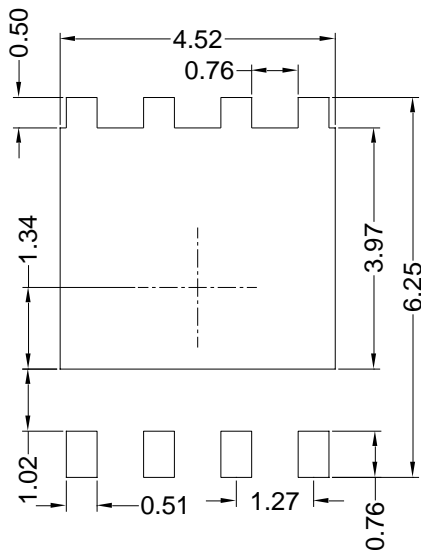
Top View
正面视图



Bottom View
背面视图



Side View
侧面视图



Suggested Solder Pad Layout
Top View

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	5.15	5.35	5.55
E	5.95	6.15	6.35
A	1.00	1.10	1.20
A1	0.254 BSC		
A2			0.10
D1	3.92	4.12	4.32
E1	3.52	3.72	3.92
D2	5.00	5.20	5.40
E2	5.66	5.86	6.06
E3	0.254 REF		
E4	0.21 REF		
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.
2. General tolerance: ± 0.10 mm.
3. The pad layout is for reference purposes only.



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