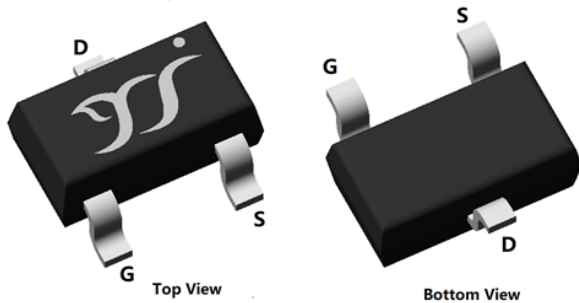
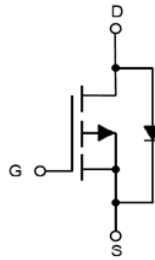


P-Channel Enhancement Mode Field Effect Transistor



SOT-23-3L



Product Summary

- V_{DS} -60V
- I_D -2.8A
- $R_{DS(ON)}$ (at $V_{GS}=-10V$) <72m Ω
- $R_{DS(ON)}$ (at $V_{GS}=-4.5V$) <90m Ω

General Description

- High density cell design for Low $R_{DS(ON)}$
- High Speed switching
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- PWM applications
- Power management
- Load switch

Limiting Values

Parameter	Conditions	Symbol	Min	Max	Unit	
Drain-source Voltage	$T_J \geq 25^\circ\text{C}; T_J \leq 150^\circ\text{C}$	V_{DS}	-	-60	V	
Gate-source Voltage	$T_J \leq 150^\circ\text{C}; \text{DC}$	V_{GS}	-20	20		
Continuous Drain Current (Note 1,2)	Steady-State	I_D	$T_A=25^\circ\text{C}, V_{GS}=-10V$	-	-2.8	A
			$T_A=100^\circ\text{C}, V_{GS}=-10V$	-	-1.8	
Pulsed Drain Current	$T_A=25^\circ\text{C}, t_p \leq 10\mu\text{s}$	I_{DM}	-	-22	A	
Maximum Body-Diode Continuous Current	$T_A=25^\circ\text{C}$	I_S	-	-1.2		
Total Power Dissipation (Note 1,2)	Steady-State	P_D	$T_A=25^\circ\text{C}$	-	1.06	W
			$T_A=100^\circ\text{C}$	-	0.42	
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 (Note 2)	$R_{\theta JA}$	-	117	$^\circ\text{C/W}$

Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJL072P06AL	F2	072AL	3000	30000	120000	7" reel



YJL072P06AL

■ Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=-250\mu A, T_j=25^\circ C$	-60	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=-60V, V_{GS}=0V, T_j=25^\circ C$	-	-	-1	μA
		$V_{DS}=-60V, V_{GS}=0V, T_j=150^\circ C$	-	-	-100	
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V, T_j=25^\circ C$	-	-	± 100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A, T_j=25^\circ C$	-1	-1.5	-2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS}=-10V, I_D=-2.7A, T_j=25^\circ C$	-	55	72	$m\Omega$
		$V_{GS}=-4.5V, I_D=-1.4A, T_j=25^\circ C$	-	66	90	$m\Omega$
Diode Forward Voltage	V_{SD}	$I_S=-2.7A, V_{GS}=0V, T_j=25^\circ C$	-	-0.82	-1.2	V
Gate Resistance	R_G	$f=1MHz, T_j=25^\circ C$	-	6	-	Ω
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=-30V, V_{GS}=0V, f=1MHz, T_j=25^\circ C$	-	1190	-	pF
Output Capacitance	C_{oss}		-	64	-	
Reverse Transfer Capacitance	C_{rss}		-	56	-	
Switching Parameters						
Total Gate Charge	Q_g	$V_{GS}=-10V, V_{DS}=-30V, I_D=-2.7A, T_j=25^\circ C$	-	30	-	nC
Gate-Source Charge	Q_{gs}		-	2	-	
Gate-Drain Charge	Q_{gd}		-	4	-	
Reverse Recovery Charge	Q_{rr}	$I_F=-2.7A, di/dt=100A/\mu s, V_{GS}=0V, V_R=-30V, T_j=25^\circ C$	-	22	-	nC
Reverse Recovery Time	t_{rr}		-	20	-	ns
Turn-on Delay Time	$t_{d(on)}$	$V_{GS}=-10V, V_{DS}=-30V, I_D=-2.7A, R_{GEN}=3\Omega, T_j=25^\circ C$	-	7.4	-	ns
Turn-on Rise Time	t_r		-	3.5	-	
Turn-off Delay Time	$t_{d(off)}$		-	43.3	-	
Turn-off Fall Time	t_f		-	15.4	-	

Note:

- The entire application environment impacts the thermal resistance values shown, they are not constants and are only valid for the particular conditions noted.
- The value of $R_{\theta JA}$ is measured with the device mounted on the 40mm*40mm*1.1mm single layer FR-4 PCB board with 1 in² pad of 2oz. Copper, in the still air environment with $T_A=25^\circ C$. The maximum allowed junction temperature of 150 $^\circ C$. The value in any given application depends on the user's specific board design.



■ Typical Electrical and Thermal Characteristics Diagrams

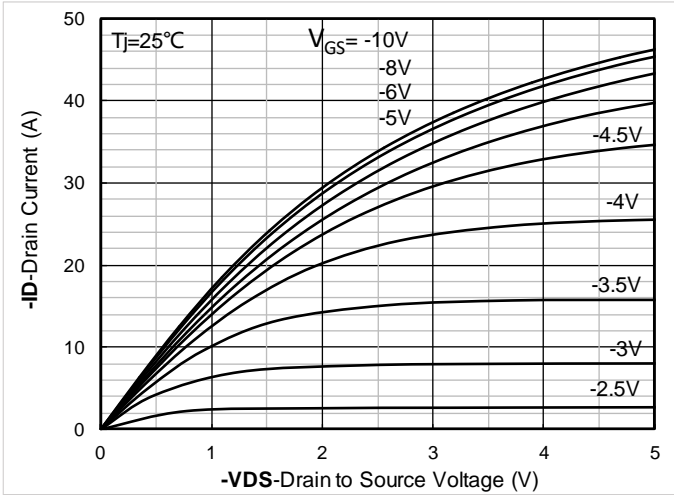


Figure 1. Output Characteristics; typical values

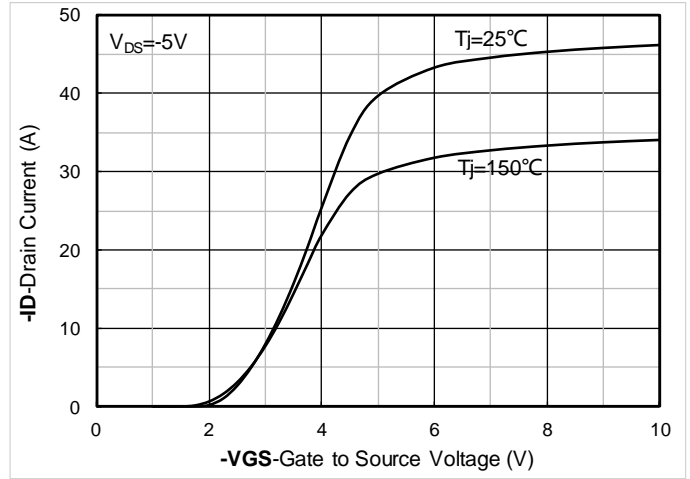


Figure 2. Transfer Characteristics; typical values

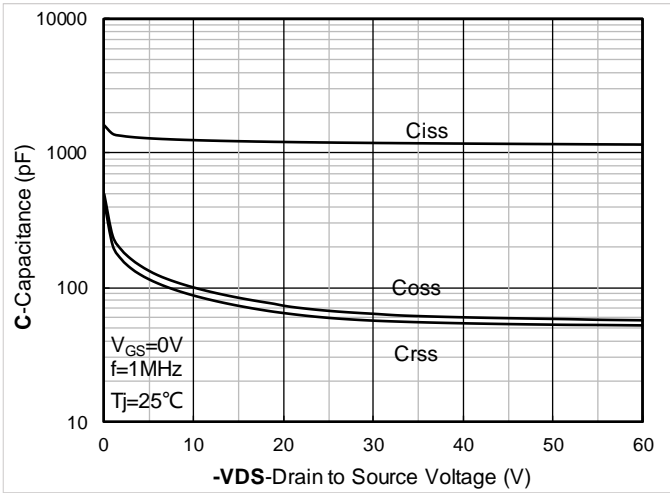


Figure 3. Capacitance Characteristics; typical values

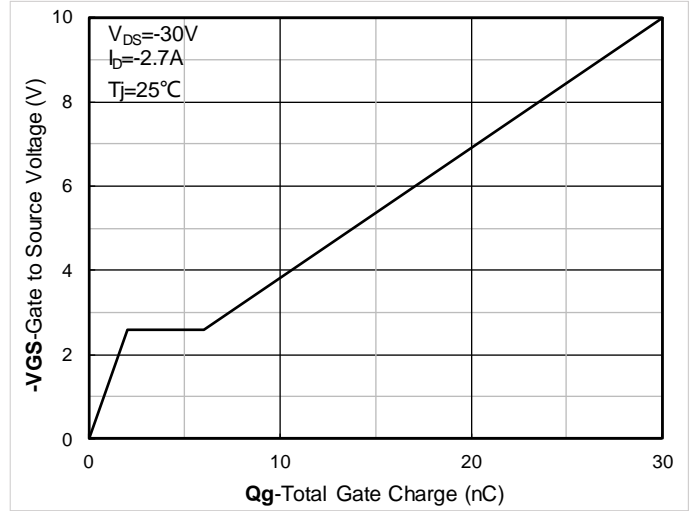


Figure 4. Gate Charge; typical values

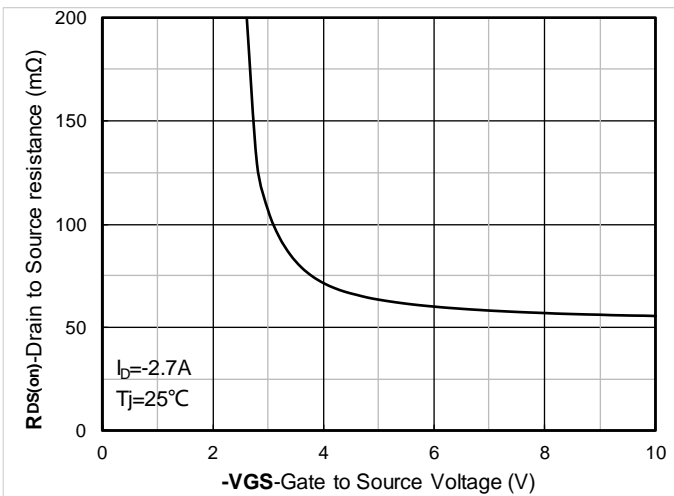


Figure 5. On-Resistance vs. Gate to Source Voltage; typical values

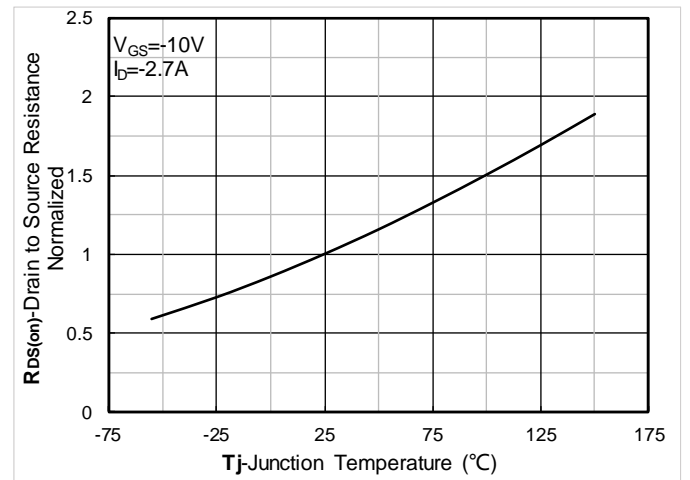


Figure 6. Normalized On-Resistance



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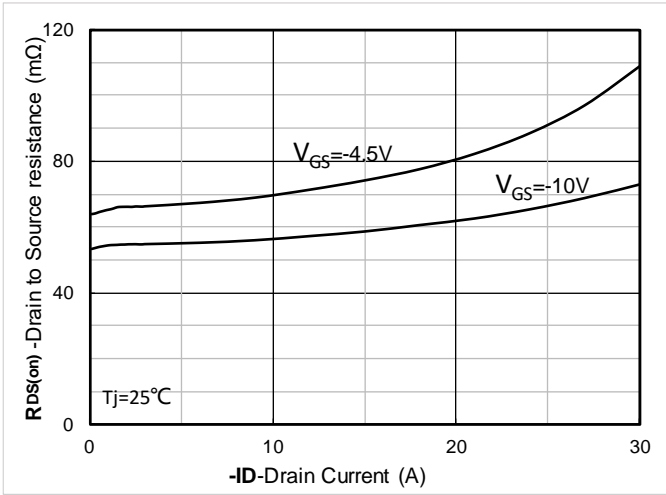


Figure 7. RDS(on) vs. Drain Current; typical values

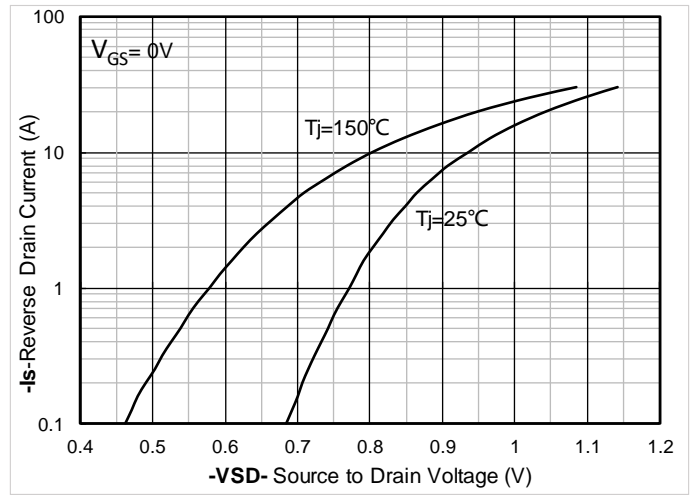


Figure 8. Forward characteristics of reverse diode; typical values

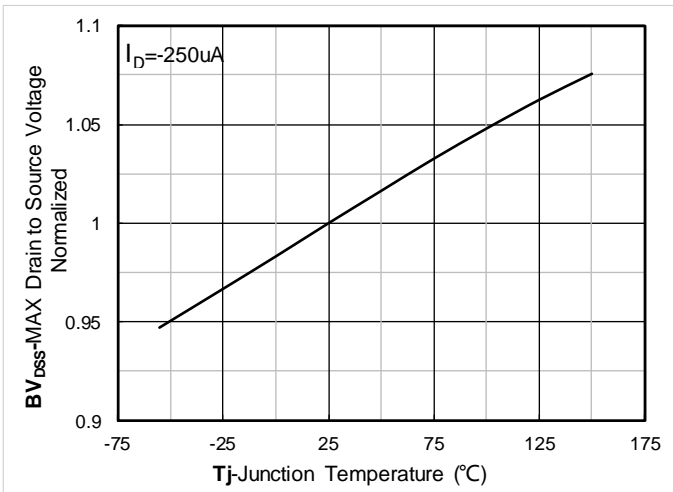


Figure 9. Normalized breakdown voltage

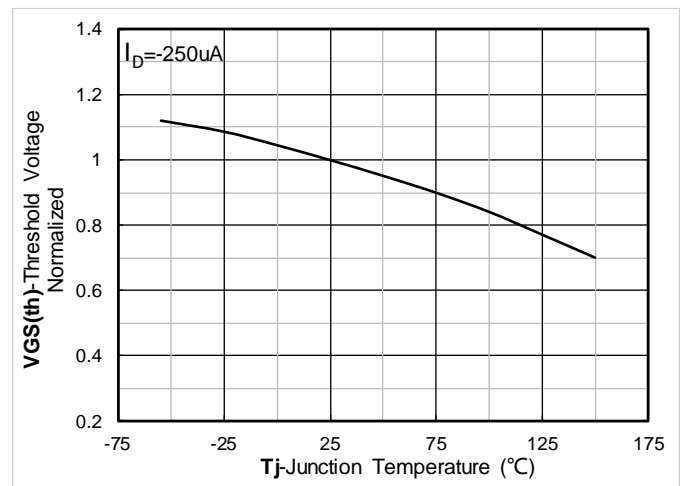


Figure 10. Normalized Threshold voltage

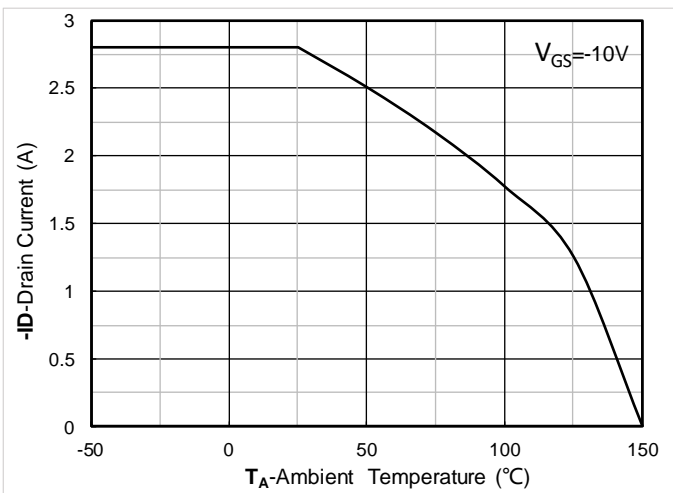


Figure 11. Current dissipation

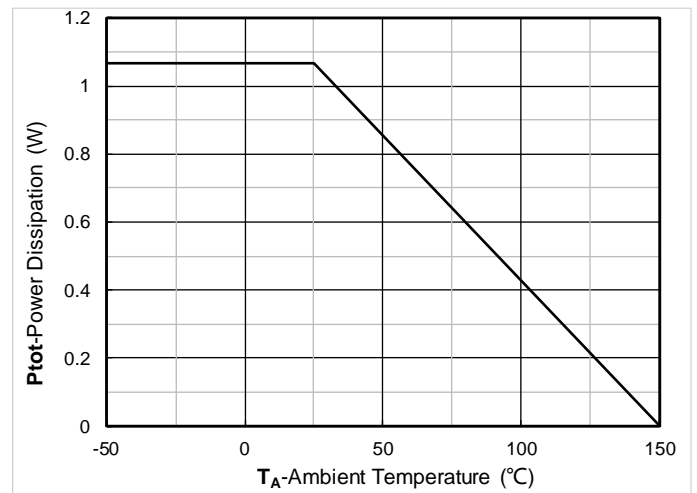


Figure 12. Power dissipation



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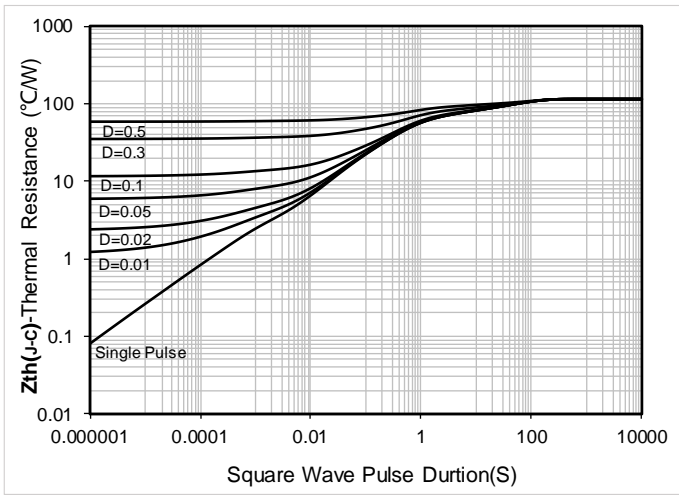


Figure 13. Maximum Transient Thermal Impedance

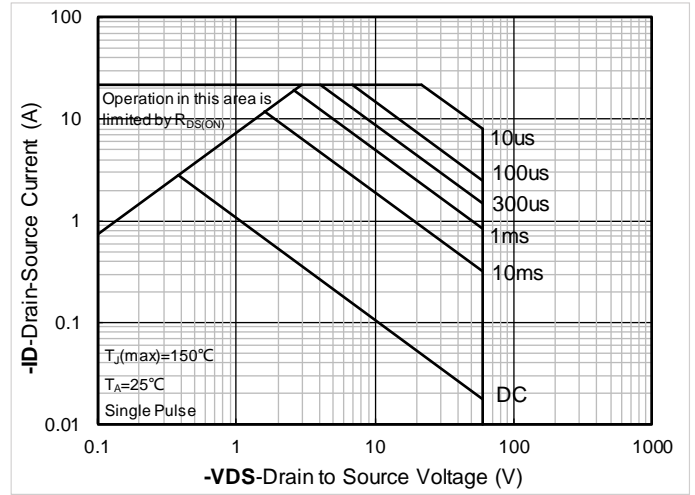
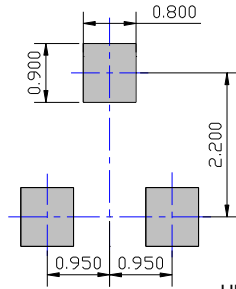
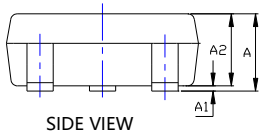
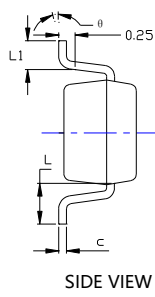
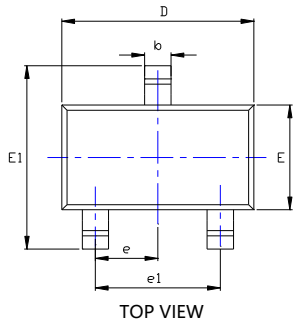


Figure 14. Safe Operation Area



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■ SOT-23-3L Package Information



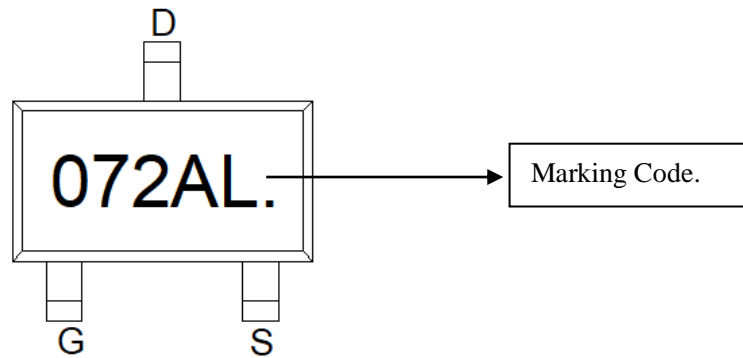
UNIT: mm

SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A	0.041	---	0.049	1.050	---	1.250
A1	0.000	---	0.008	0.000	---	0.200
A2	0.041	0.043	0.045	1.050	1.100	1.150
b	0.012	0.016	0.020	0.300	0.400	0.500
c	0.004	---	0.008	0.100	---	0.200
D	0.111	0.115	0.119	2.820	2.920	3.020
E	0.059	0.063	0.067	1.500	1.600	1.700
E1	0.104	0.110	0.116	2.650	2.800	2.950
e	0.037 TYP			0.950 TYP		
e1	0.071	0.075	0.079	1.800	1.900	2.000
L	0.024 REF			0.600 REF		
L1	0.012	0.018	0.024	0.300	0.450	0.600
θ	0°	---	8°	0°	---	8°

- NOTE:
1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
 2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
 3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



■Marking



Note:

1. All marking is at middle of the product body
2. All marking is in laser printing
3. 072AL. is marking code.
4. Body color: Black



YJL072P06AL

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