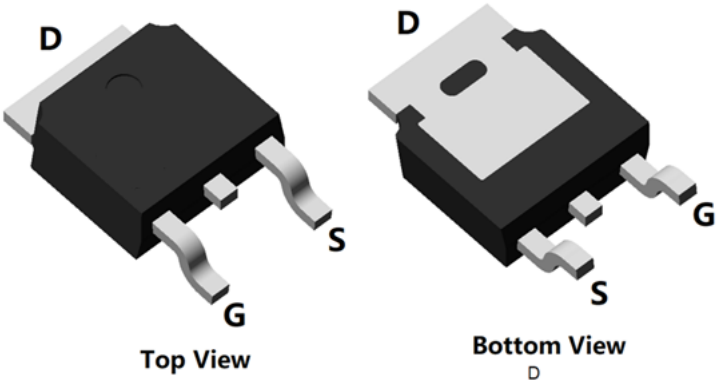
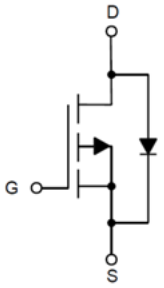
P-Channel Enhancement Mode Field Effect Transistor



TO-252



Product Summary

- V_{DS} -100V
- I_D -18A
- $R_{DS(ON)}$(at V_{GS}=-10V) ＜110 mΩ
- $R_{DS(ON)}$(at V_{GS}=-4.5V) ＜120 mΩ
- 100% EAS Tested
- 100% ▽VDS Tested
- ESD Level(HBM) Class 1B

General Description

- Split gate trench MOSFET technology
- Low $R_{DS(on)}$ & FOM
- Extremely low switching loss
- Excellent stability and uniformity
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- Power management
- Portable equipment

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-100	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_C=25℃	I_D	-18	A
	Tc=100℃		-12	
Pulsed Drain Current [A]		I_{DM}	-72	A
Avalanche energy [B]		EAS	72	mJ
Total Power Dissipation [C]	Tc=25℃	P_D	72	W
	Tc=100℃		29	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [D]	Steady-State	$R_{\theta JA}$	40	50	℃/W
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	1.35	1.7	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
D18GP10A	F1/F2	D18GP10A	2500	/	25000	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=-250μA	-100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-100V, V_{GS}=0V	-	-	-1	μA
		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=-250μA	-1.0	-1.8	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-10V, I_D=-10A	-	83	110	mΩ
		V_{GS}=-4.5V, I_D=-5A	-	95	120	
Diode Forward Voltage	V_{SD}	I_S=-10A, V_{GS}=0V	-	-	-1.3	V
Gate resistance	R_G	f=1MHz	-	10	-	Ω
Maximum Body-Diode Continuous Current	I_S		-	-	-18	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	V_{GS}=-10V, V_{DS}=-50V, I_D=-5A	-	20.1	-	nC
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}		-	70	-	ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V, V_{DD}=-50V, R_L=2.5Ω 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℃, V_{DD}=-50V, V_G=-10V, R_G=25Ω, L=0.5mH, IAS=-17A.
C. P_d is based on max. junction temperature, using junction-case thermal resistance.
D. The value of $R_{\theta JA}$ is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a 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.

■Typical Electrical and Thermal Characteristics Diagrams

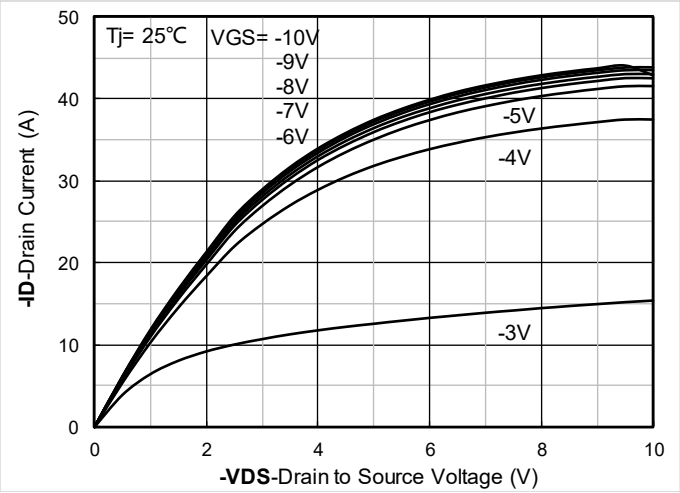


Figure1. Output Characteristics

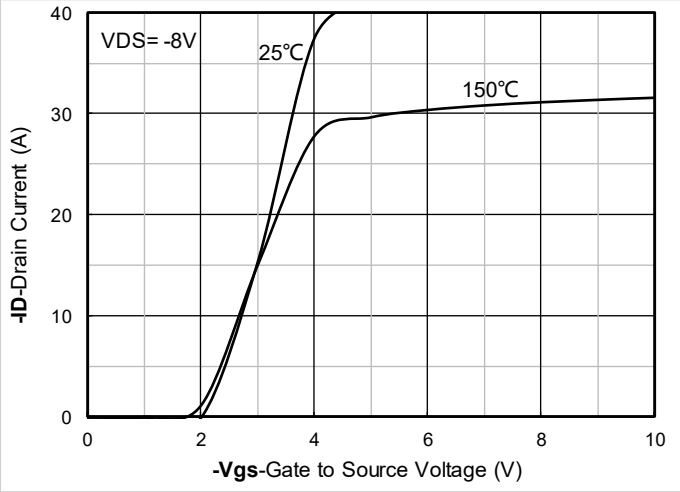


Figure2. Transfer Characteristics

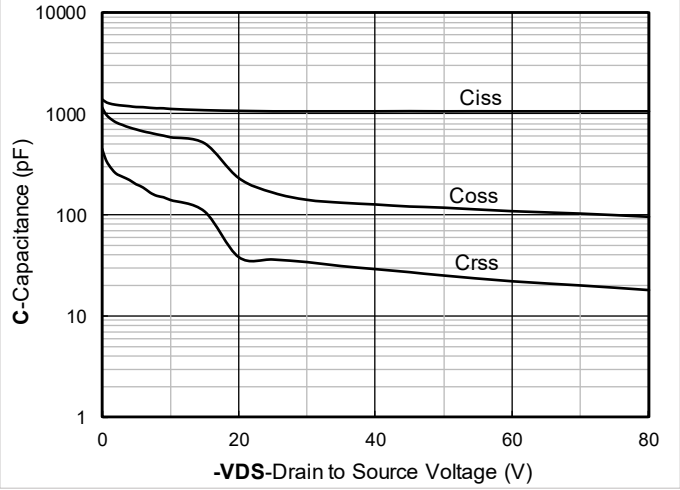


Figure3. Capacitance Characteristics

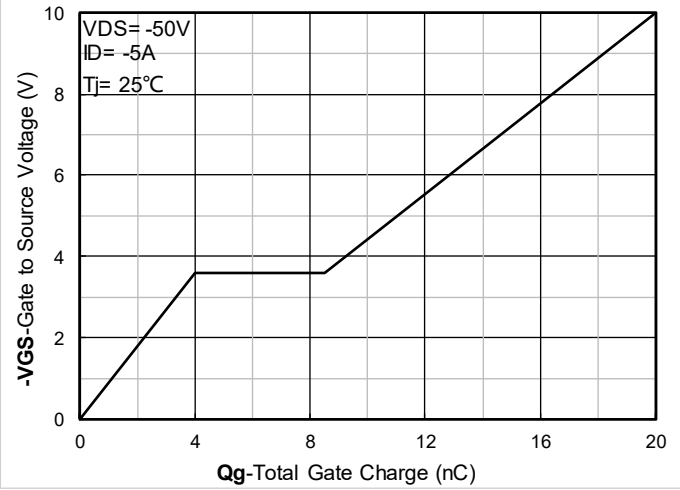


Figure4. Gate Charge

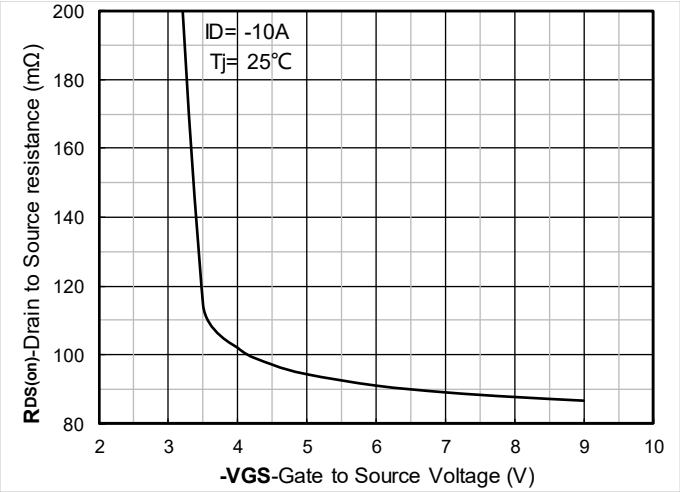


Figure5. On-Resistance vs Gate to Source Voltage

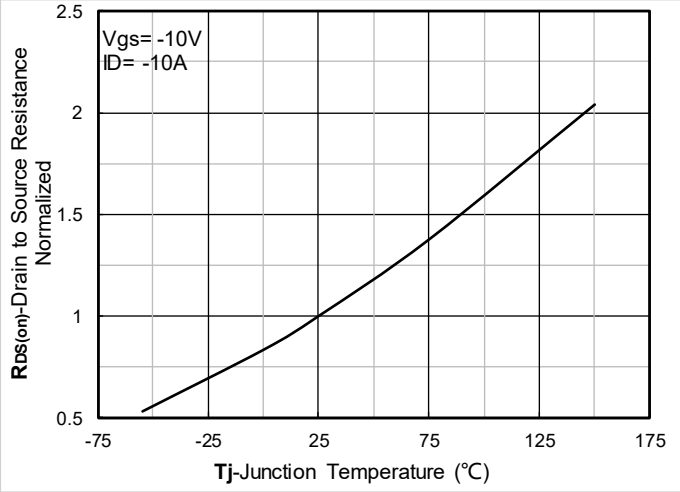


Figure6. Normalized On-Resistance

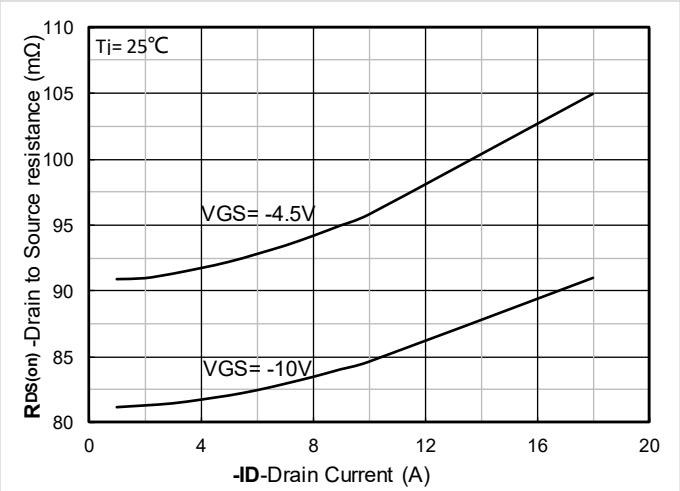


Figure7. $R_{DS(on)}$ VS Drain Current

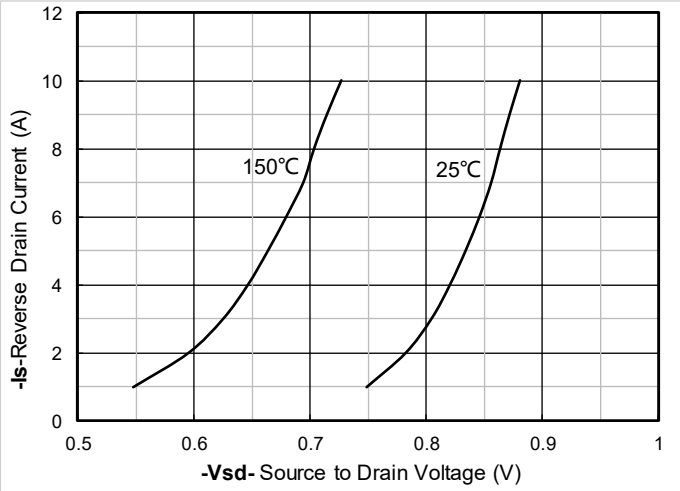


Figure8. Forward characteristics of reverse diode

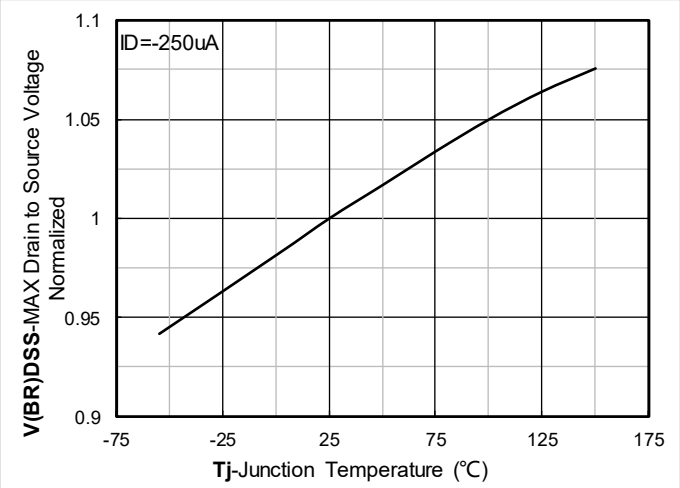


Figure9. Normalized breakdown voltage

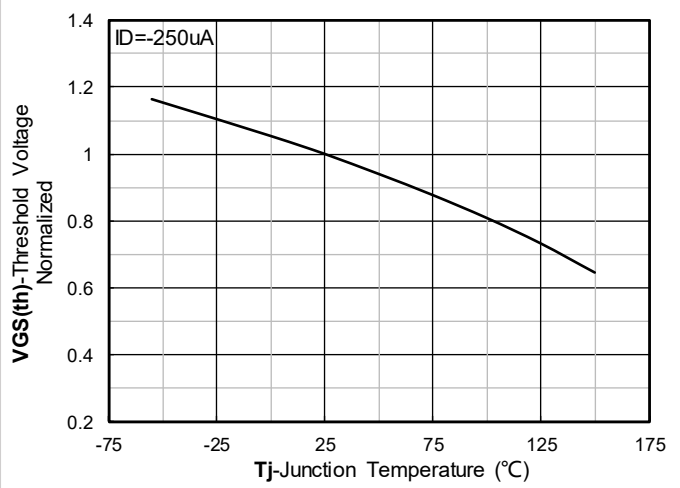


Figure10. Normalized Threshold voltage

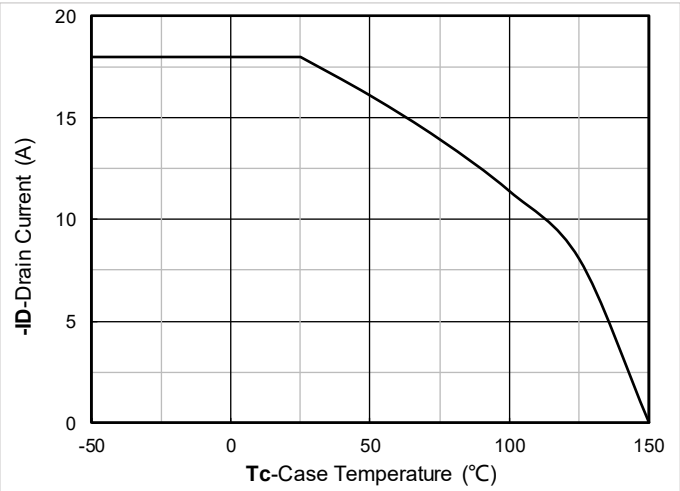


Figure11. Current dissipation

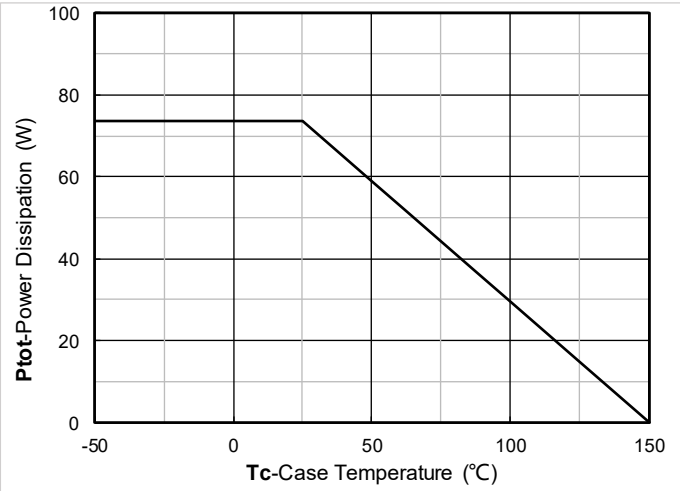


Figure12. Power dissipation

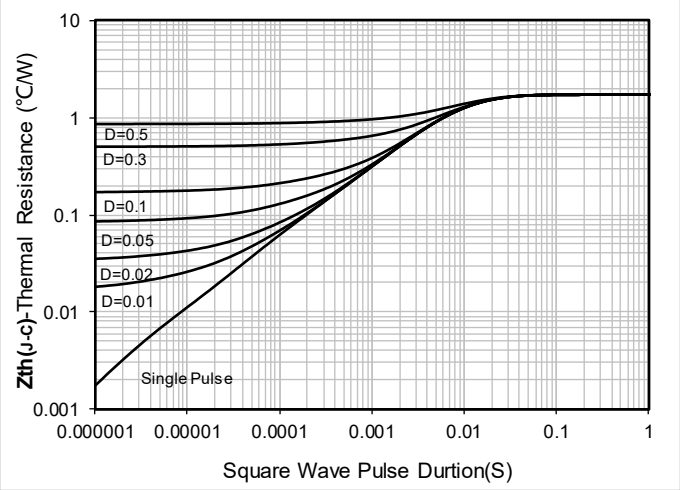


Figure13. Maximum Transient Thermal Impedance

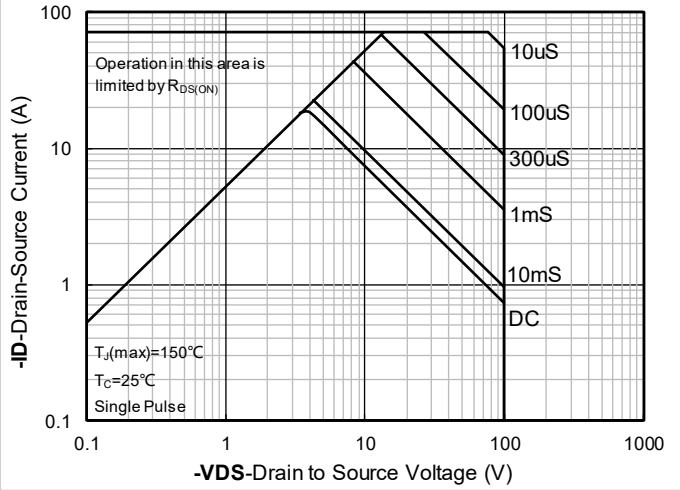
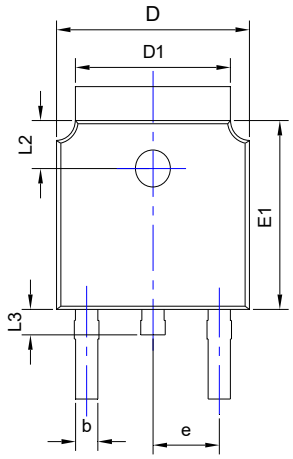
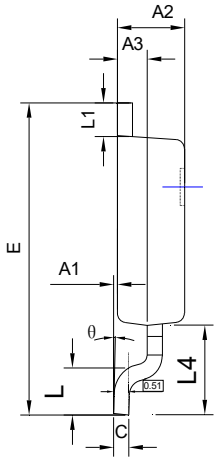


Figure14. Safe Operation Area

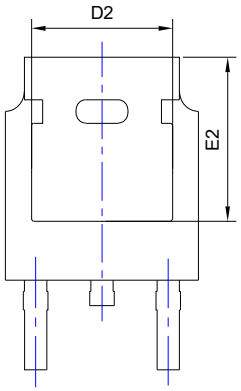
■ TO-252-B Package Information



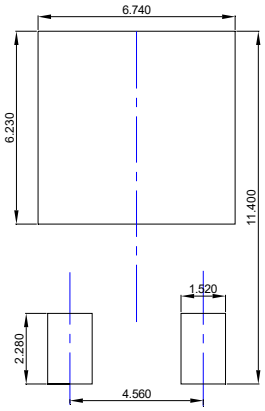
TOP VIEW



SIDE VIEW



BOTTOM VIEW



UNIT：mm

SUGGESTED SOLDER PAD LAYOUT

SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.008	0.000	---	0.200
A2	0.087	0.091	0.094	2.200	2.300	2.400
A3	0.035	0.039	0.043	0.900	1.000	1.100
b	0.026	0.030	0.034	0.660	0.760	0.860
c	0.018	0.020	0.023	0.460	0.520	0.580
D	0.256	0.260	0.264	6.500	6.600	6.700
D1	0.203	0.209	0.215	5.150	5.300	5.450
D2	0.181	0.189	0.195	4.600	4.800	4.950
E	0.390	0.398	0.406	9.900	10.100	10.300
E1	0.236	0.240	0.244	6.000	6.100	6.200
E2	0.203	0.209	0.215	5.150	5.300	5.450
e	0.090BSC			2.286BSC		
L	0.049	0.059	0.069	1.250	1.500	1.750
L1	0.035	---	0.050	0.900	---	1.270
L2	0.055	---	0.075	1.400	---	1.900
L3	0.024	0.031	0.039	0.600	0.800	1.000
L4	0.114REF			2.900REF		
θ	0°	---	10°	0°	---	10°

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.

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