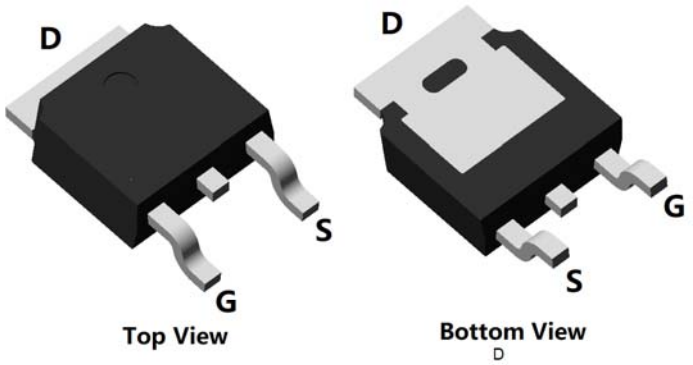
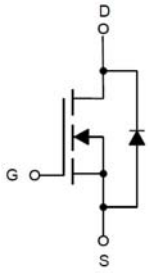
N-Channel Enhancement Mode Field Effect Transistor



TO-252



Product Summary

- V_{DS} 30V
- I_D 80A
- $R_{DS(ON)}$(at V_{GS}= 10V) ＜4.9mohm
- $R_{DS(ON)}$(at V_{GS}= 4.5V) ＜7.0mohm
- 100% EAS Tested
- 100% ▽V_{DS} Tested
- ESD Level(HBM) Class 1C

General Description

- Trench Power LV 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

- High current load applications
- Load switch
- Hard switched and high frequency circuits
- Uninterruptible power supply

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

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	30	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_C=25℃	I_D	80	A
	T_C=100℃		50	
Pulsed Drain Current [A]		I_{DM}	190	A
Single Pulse Avalanche Energy [B]		E_{AS}	100	mJ
Total Power Dissipation [C]	T_C=25℃	P_D	38	W
	T_C=100℃		15	W
Thermal Resistance Junction-to-Ambient [D]		$R_{\theta JA}$	60	℃/ W
Thermal Resistance Junction-to-Case		$R_{\theta JC}$	3.3	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
D80N03B	F1/F2	D80N03B	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	30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V,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	1.5	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=20A		3.4	4.9	mΩ
		V_{GS}= 4.5V, I_D=15A		5.4	7.0	
Diode Forward Voltage	V_{SD}	I_S=20A,V_{GS}=0V		0.85	1.2	V
Gate resistance	R_G	f=1MHz	-	2.7	-	Ω
Maximum Body-Diode Continuous Current	I_S				80	A
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=15V,V_{GS}=0V,f=1MHZ		2191		pF
Output Capacitance	C_{oss}			300		
Reverse Transfer Capacitance	C_{rss}			247		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=10V,V_{DS}=15V,I_D=20A		46.3		nC
Gate-Source Charge	Q_{gs}			8.8		
Gate-Drain Charge	Q_{gd}			9.2		
Reverse Recovery Chrage	Q_{rr}	I_F=20A, di/dt=100A/us		1.6		
Reverse Recovery Time	t_{rr}			11		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=10V, V_{DD}=15V,R_L=0.75Ω R_{GEN}=3Ω		11		
Turn-on Rise Time	t_r			80		
Turn-off Delay Time	$t_{D(off)}$			39		
Turn-off fall Time	t_f			92		

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=20A.
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 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.

■ Typical Performance Characteristics

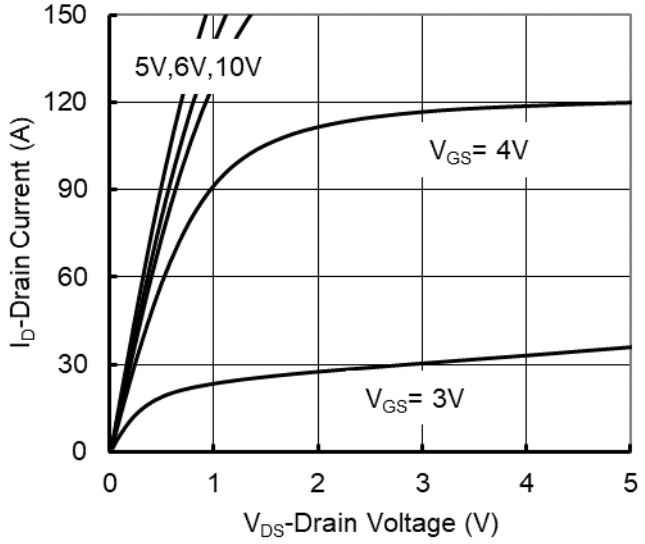


Figure 1. Output Characteristics

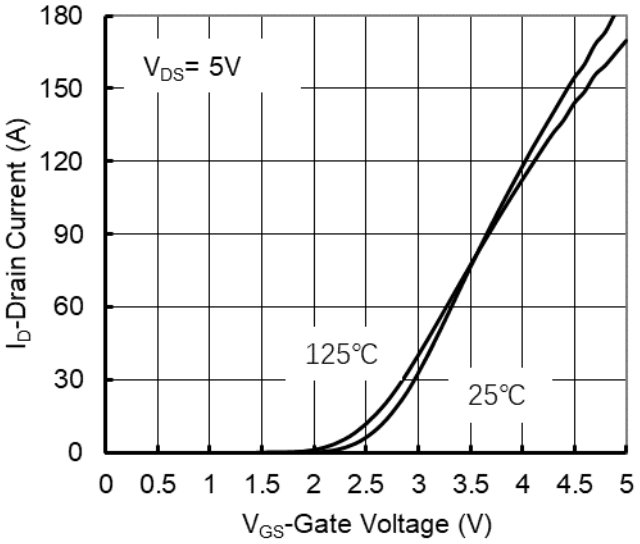


Figure 2. Transfer Characteristics

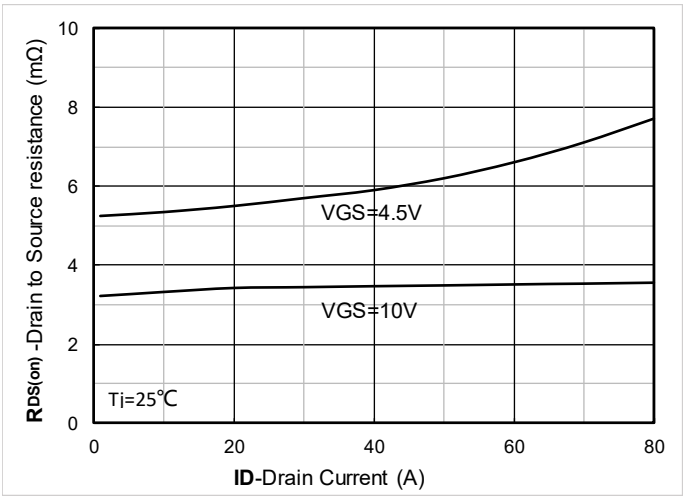


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

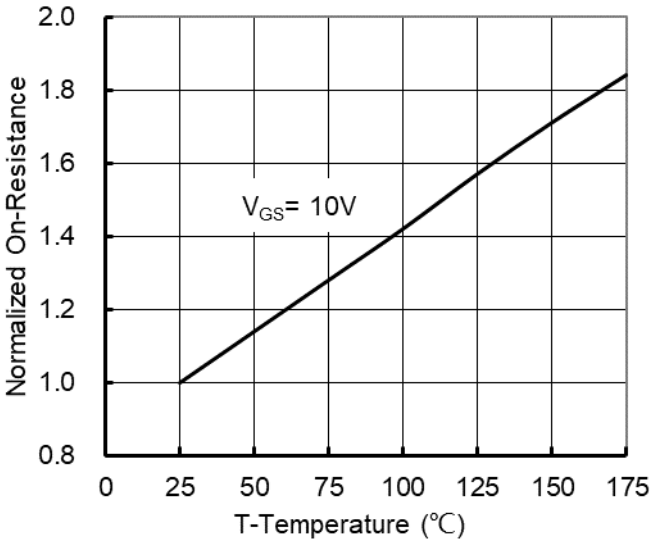


Figure 4. On-Resistance vs. Junction Temperature

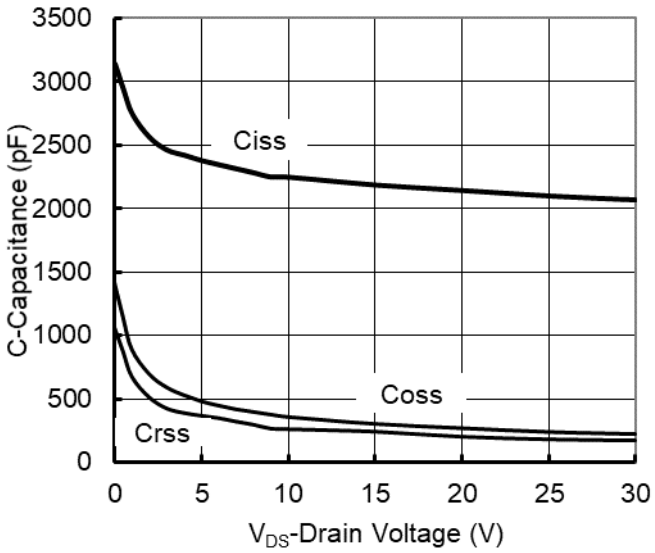


Figure 5. Capacitance Characteristics

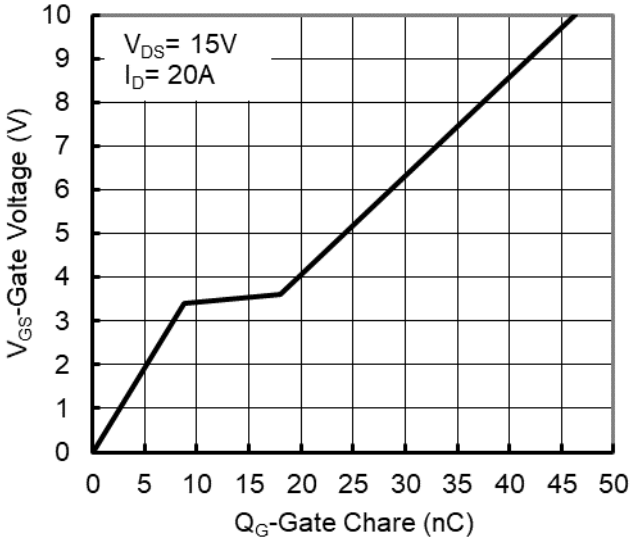


Figure 6. Gate Charge

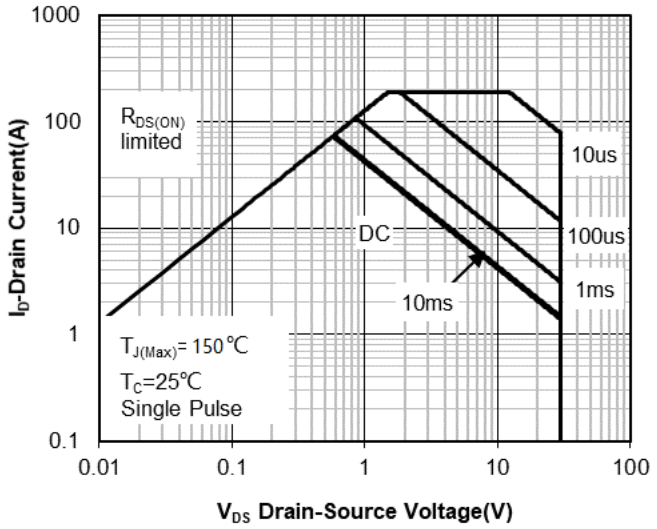


Figure 7. Safe Operation Area

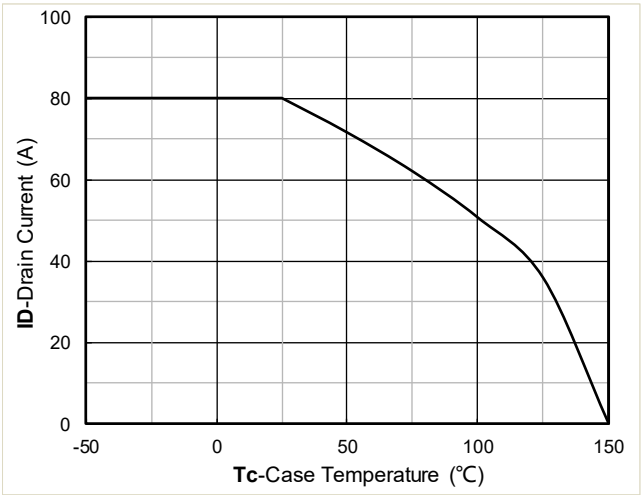


Figure 8. Maximum Continuous Drain Current vs Case Temperature

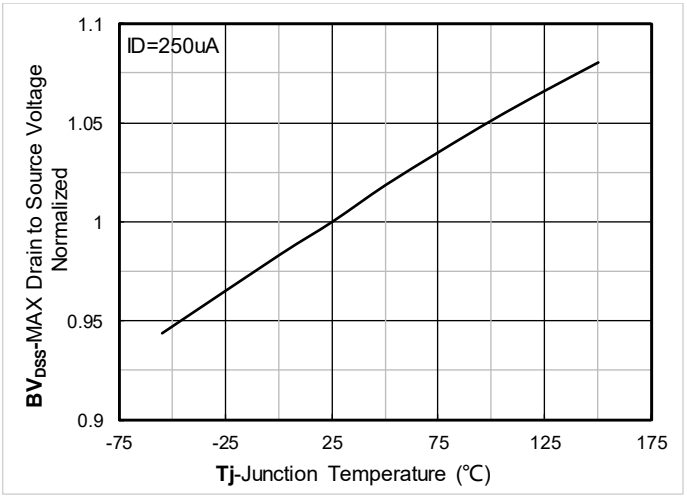


Figure 9. Normalized breakdown voltage

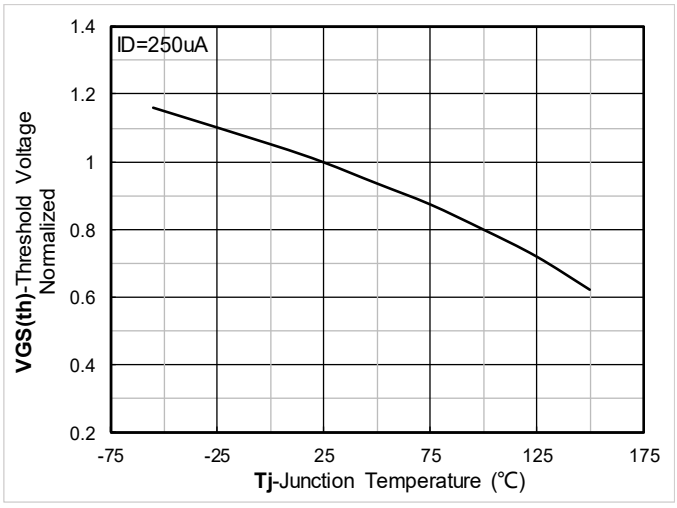


Figure 10. Normalized Threshold voltage

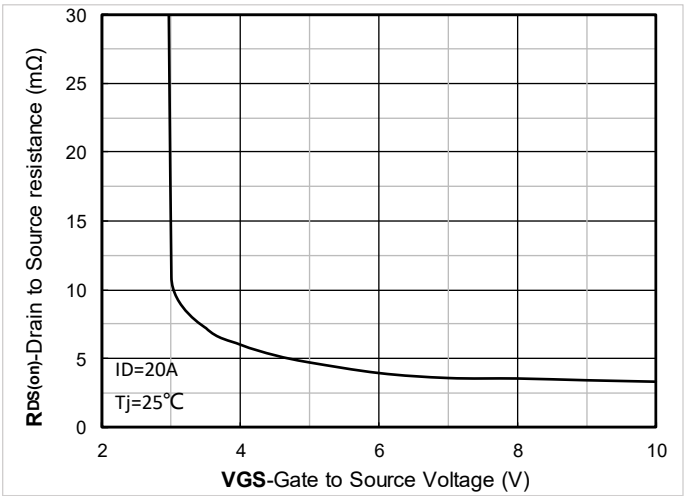


Figure 11. On-Resistance vs Gate to Source Voltage

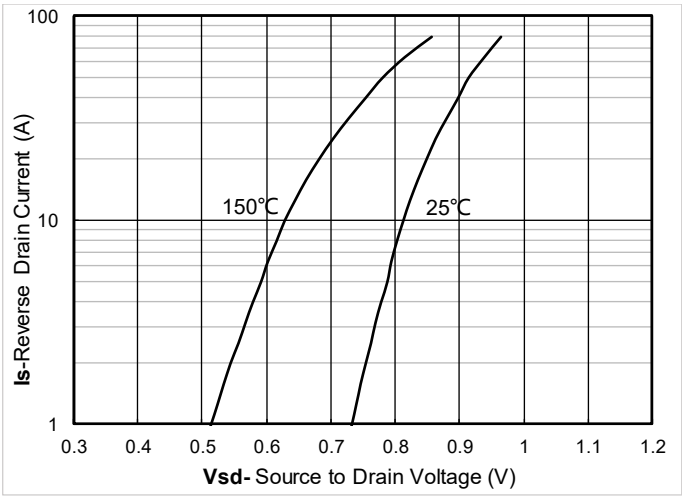


Figure 12. Forward characteristics of reverse diode

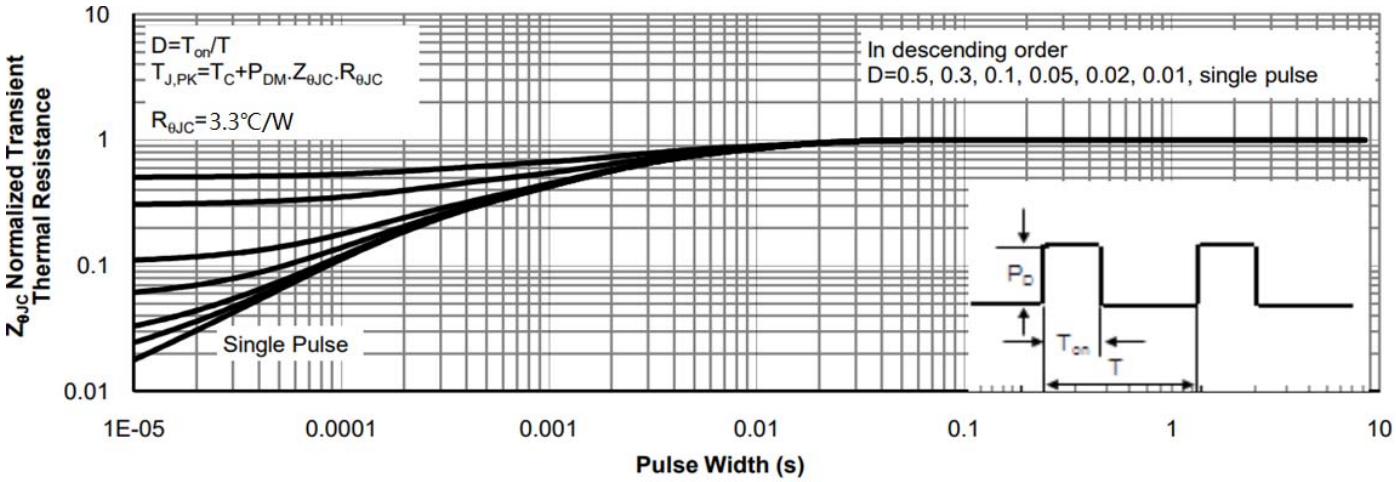
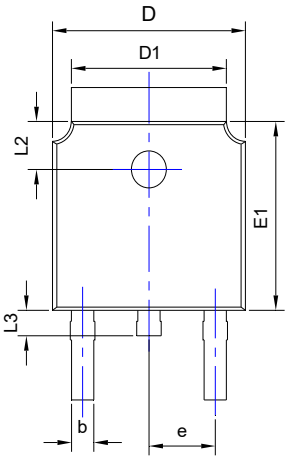
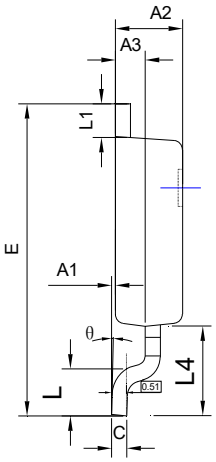


Figure 13. Normalized Maximum Transient Thermal Impedance

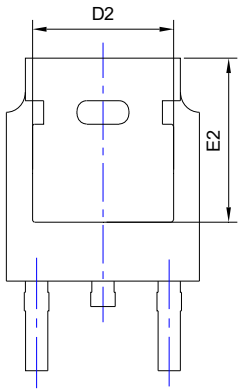
■TO-252-B Package information



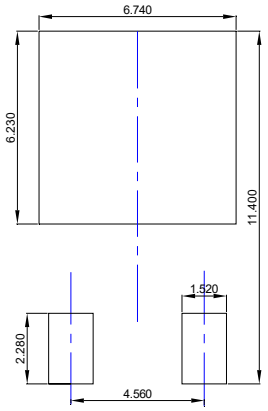
TOP VIEW



SIDE VIEW



BOTTOM VIEW



SUGGESTED SOLDER PAD LAYOUT

UNIT：mm

DIMENSIONS						
SYMBOL	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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