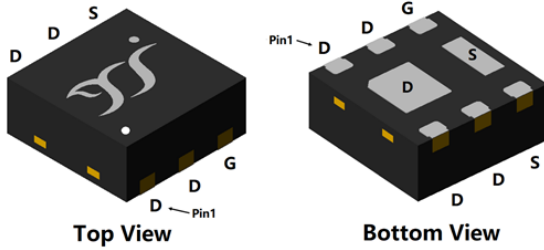
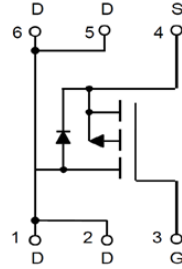


P-Channel Enhancement Mode Field Effect Transistor



DFN2020-6L



Product Summary

• V_{DS}	-20V
• I_D	-25A
• $R_{DS(ON)}$ (at $V_{GS}=-4.5V$)	<14m Ω
• $R_{DS(ON)}$ (at $V_{GS}=-2.5V$)	<37m Ω
• $R_{DS(ON)}$ (at $V_{GS}=-1.8V$)	<51m Ω

General Description

- Voltage controlled small signal switch
- Low input capacitance
- Fast switching speed
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- E-Cigarettes

Limiting Values

Parameter	Conditions		Symbol	Min	Max	Unit
Drain-source Voltage			V_{DS}	-	-20	V
Gate-source Voltage			V_{GS}	-12	12	
Continuous Drain Current (Note 1,2)	Steady-State	$T_A=25^{\circ}C, V_{GS}=-4.5V$	I_D	-	-8.7	A
		$T_A=100^{\circ}C, V_{GS}=-4.5V$		-	-5.5	
Continuous Drain Current (Note 1,3)	Steady-State	$T_C=25^{\circ}C, V_{GS}=-4.5V$, Chip limitation		-	-25	
		$T_C=100^{\circ}C, V_{GS}=-4.5V$		-	-15.8	
Pulsed Drain Current	$T_C=25^{\circ}C, t_p \leq 10\mu s$		I_{DM}	-	-100	
Maximum Body-Diode Continuous Current	$T_C=25^{\circ}C$		I_S		-12	
Total Power Dissipation (Note 1,2)	Steady-State	$T_A=25^{\circ}C$	P_D	-	1.6	W
		$T_A=100^{\circ}C$		-	0.64	
Total Power Dissipation (Note 1,3)	Steady-State	$T_C=25^{\circ}C$		-	13.7	
		$T_C=100^{\circ}C$		-	5.4	
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 (Note 2)	Steady-State	$R_{\theta JA}$	-	78	$^{\circ}C/W$
Thermal Resistance Junction-to-Case	Steady-State	$R_{\theta JC}$	-	9.1	

Ordering Information (Example)

PREFERRED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
YJQT014P02AJ	F2	14P02A	3000	30000	120000	7" reel



YJQT014P02AJ

■ Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA, T _j =25°C	-20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V, T _j =25°C	-	-	-1	μA
		V _{DS} =-20V, V _{GS} =0V, T _j =125°C	-	-	-100	
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±12V, V _{DS} =0V, T _j =25°C	-	-	±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250μA, T _j =25°C	-0.36	-0.66	-0.96	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-9A, T _j =25°C	-	11.5	14	mΩ
		V _{GS} =-2.5V, I _D =-4.5A, T _j =25°C	-	15	37	mΩ
		V _{GS} =-1.8V, I _D =-2.5A, T _j =25°C	-	20.5	51	mΩ
Diode Forward Voltage	V _{SD}	I _S =-9A, V _{GS} =0V, T _j =25°C	-	-0.8	-1.2	V
Gate Resistance	R _G	f=1MHz, T _j =25°C	-	7	-	Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHz, T _j =25°C	-	1514	-	pF
Output Capacitance	C _{oss}		-	169	-	
Reverse Transfer Capacitance	C _{rss}		-	149	-	
Switching Parameters						
Total Gate Charge	Q _g	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-9A, T _j =25°C	-	15.6	-	nC
Gate-Source Charge	Q _{gs}		-	2.8	-	
Gate-Drain Charge	Q _{gd}		-	3	-	
Reverse Recovery Charge	Q _{rr}	I _F =-9A, di/dt=100A/μs, V _{GS} =0V, V _R =-10V, T _j =25°C	-	9.3	-	nC
Reverse Recovery Time	t _{rr}		-	16	-	ns
Turn-on Delay Time	t _{D(on)}	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-9A, R _{GEN} =3Ω, T _j =25°C	-	10.6	-	ns
Turn-on Rise Time	t _r		-	62.9	-	
Turn-off Delay Time	t _{D(off)}		-	63.5	-	
Turn-off Fall Time	t _f		-	61.2	-	

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.
- Thermal resistance from junction to soldering point (on the exposed drain pad).



■ Typical Electrical and Thermal Characteristics Diagrams

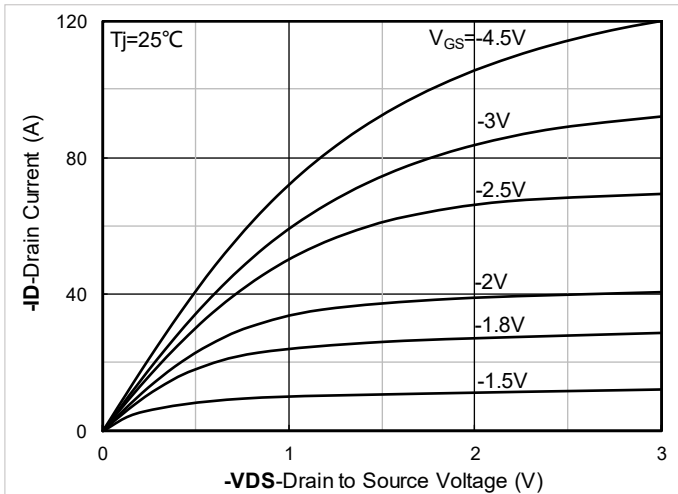


Figure 1. Output Characteristics; typical values

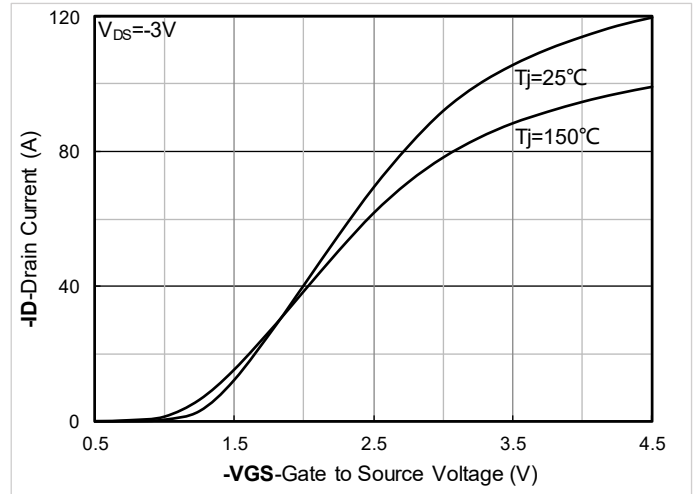


Figure 2. Transfer Characteristics; typical values

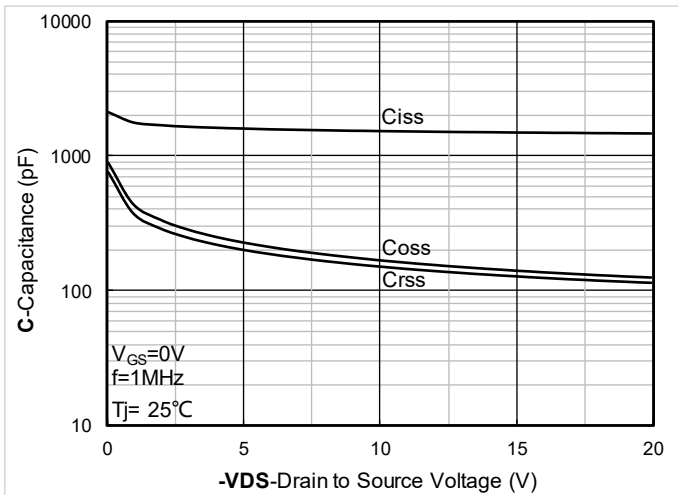


Figure 3. Capacitance Characteristics; typical values

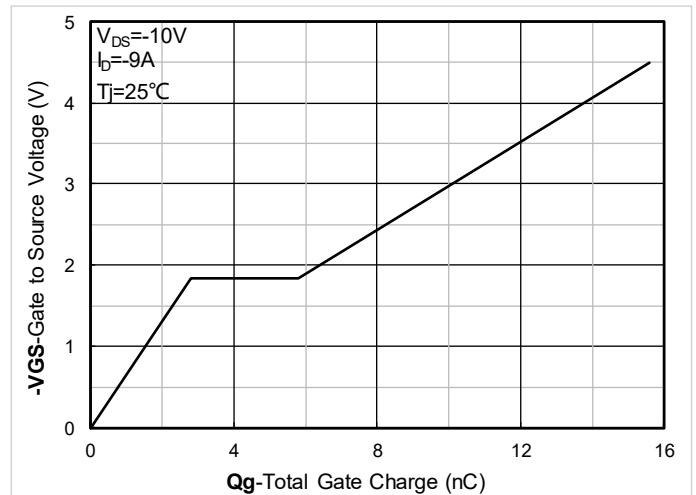


Figure 4. Gate Charge; typical values

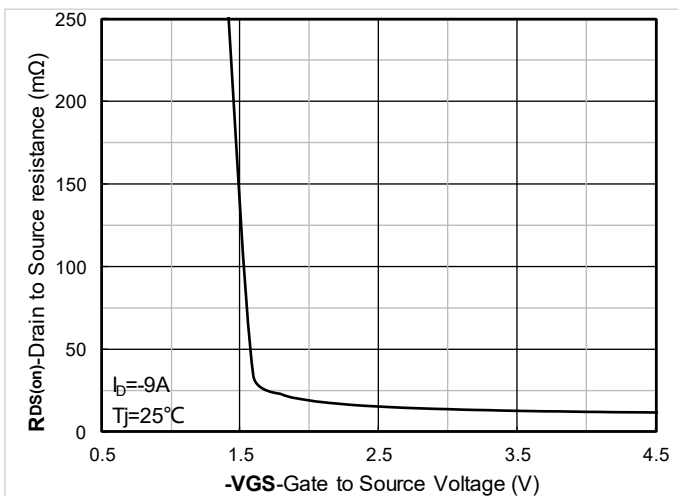


Figure 5. On-Resistance vs Gate to Source Voltage; typical values

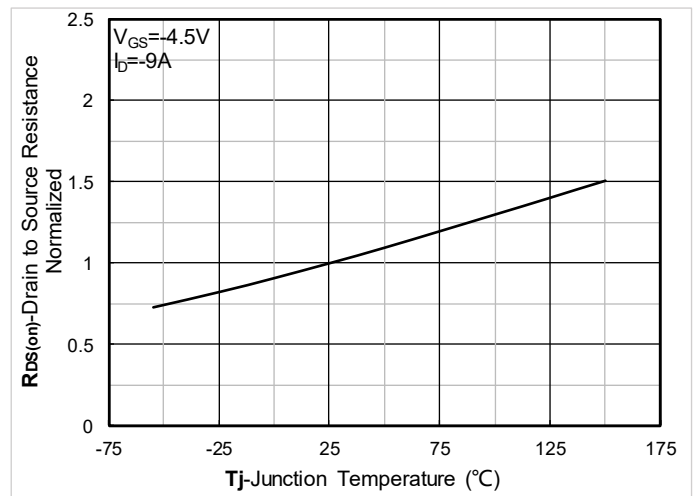


Figure 6. Normalized On-Resistance



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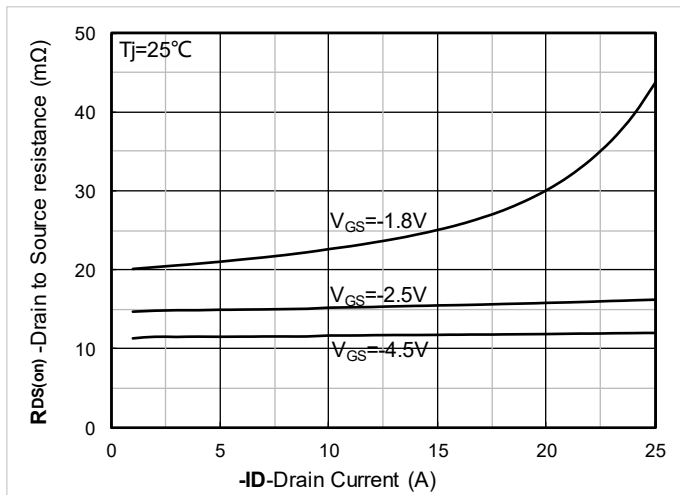


Figure 7. RDS(on) VS Drain Current; typical values

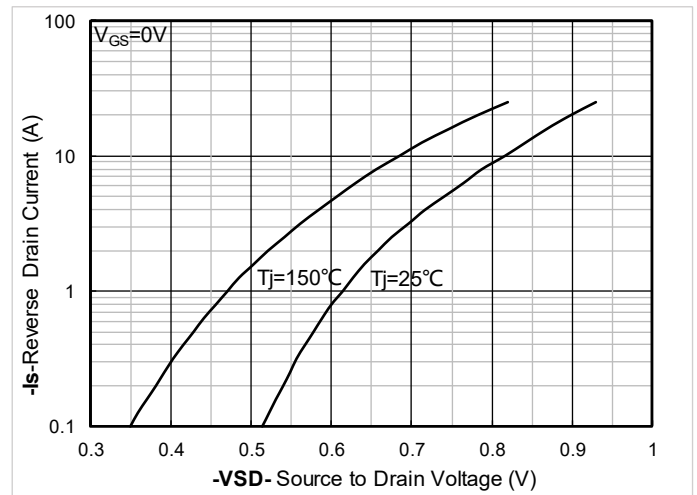


Figure 8. Forward characteristics of reverse diode; typical values

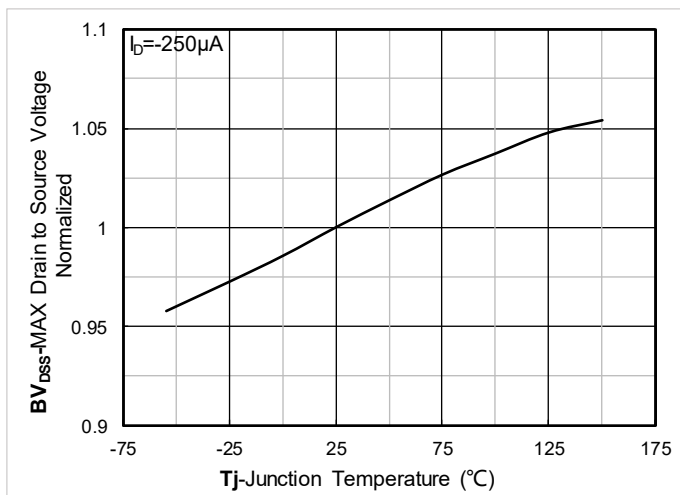


Figure 9. Normalized breakdown voltage

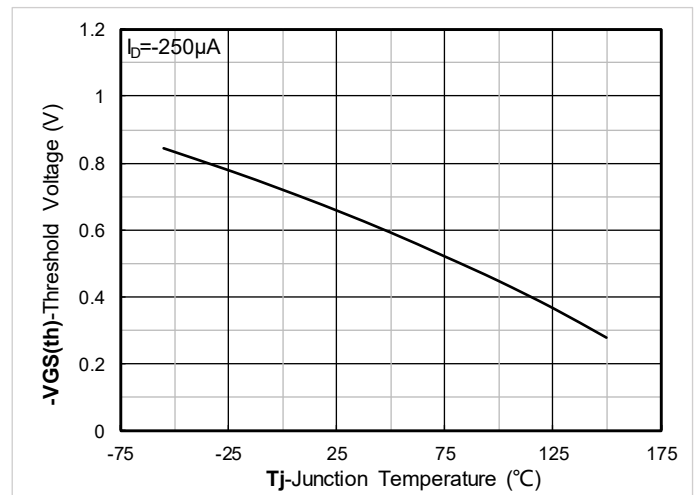


Figure 10. Gate Threshold voltage; typical values

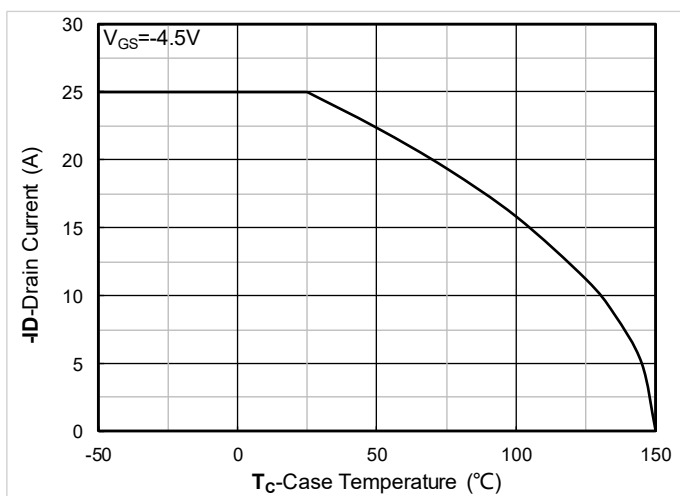


Figure 11. Current dissipation

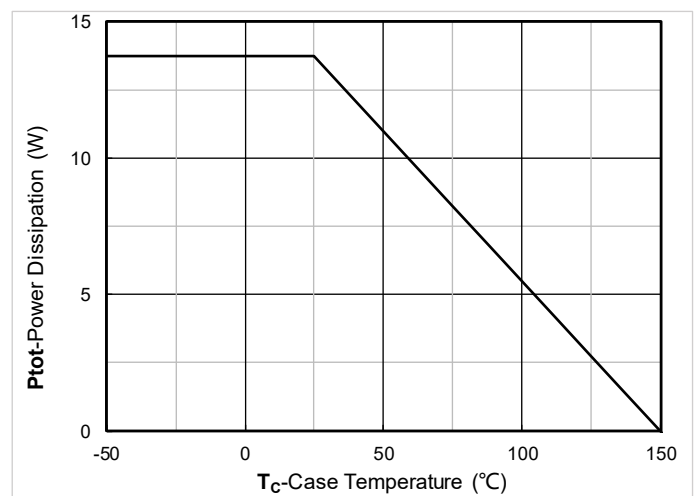


Figure 12. Power dissipation

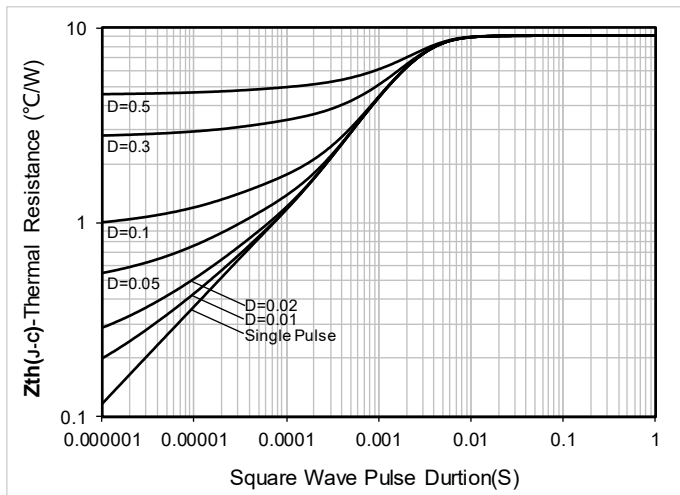


Figure 13. Maximum Transient Thermal Impedance

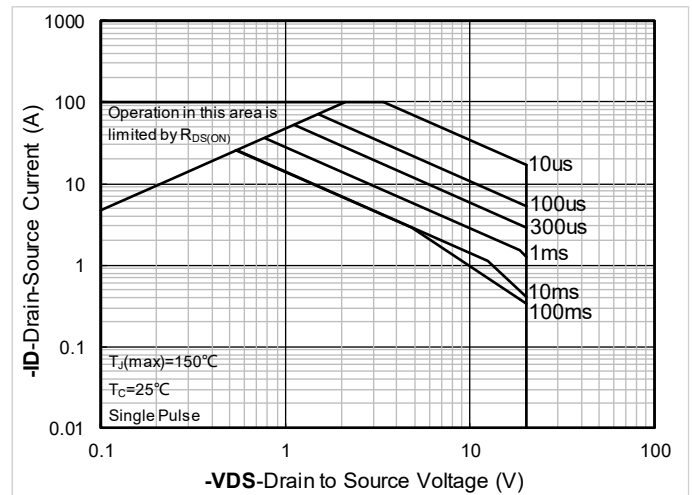
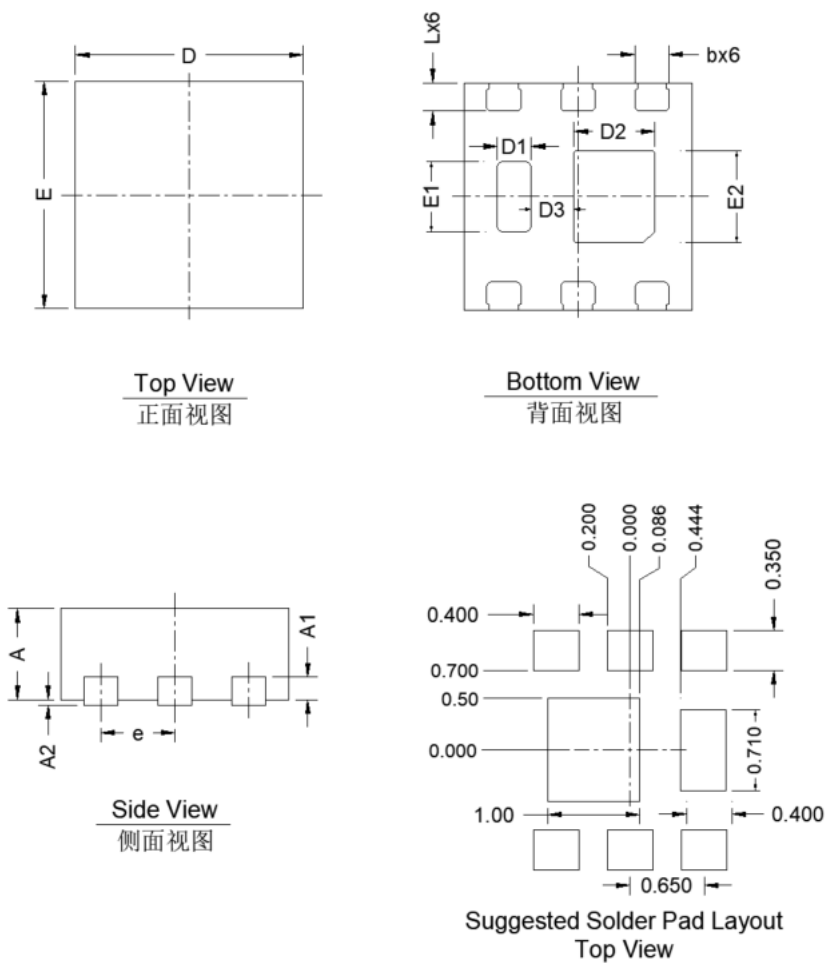


Figure 14. Safe Operation Area



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■ DFN2020-6L-I-0.75MM Package information

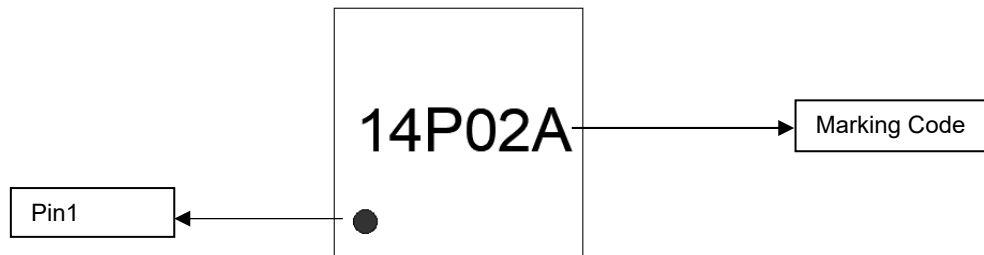


SYMBOL	MILLIMETER		
	MIN	NOM	MAX
D	1.90	2.00	2.10
E	1.90	2.00	2.10
A	0.70	0.75	0.80
A1	0.20 BSC		
A2			0.10
D1	0.20	0.30	0.40
D2	0.80	0.90	1.0
D3	0.25	0.35	0.45
E1	0.51	0.61	0.71
E2	0.90	0.95	1.0
L	0.15	0.25	0.35
b	0.20	0.30	0.40
e	0.65 BSC		

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:±0.10mm.
3.The pad layout is for reference purposes only.



■ Marking Information



Note:

1. All marking is at middle of the product body
2. All marking is in laser printing
3. 14P02A is marking code
4. Body color: Black



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