

DFN2020-6L Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=-20V$
- $I_D=-16A$
- $R_{DS(on)}@V_{GS}=-4.5V < 18m\Omega$
- $R_{DS(on)}@V_{GS}=-2.5V < 22m\Omega$
- $R_{DS(on)}@V_{GS}=-1.8V < 45m\Omega$
- Low Thermal Resistance
- Low Gate Charge

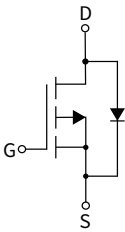
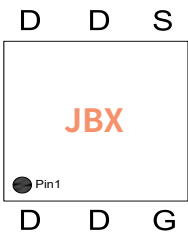
Applications

- Load Switch for Protable Devices
- Voltage controlled small signal switch

Mechanical Data

- Case: DFN2020-6L
Molding compound meets UL 94V-0 flammability rating, RoHS-compliant,halogen-free
- Terminals: Solder plated, solderable per MIL-STD-750,Method 2026

Function Diagram



Ordering Information

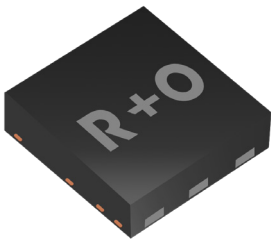
PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
DFN2020-6L	R3	0.01	3000	30000	90000	7"

Maximum Ratings (Ta=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Drain-source Voltage	V_{DS}	V	-20
Gate-source Voltage	V_{GS}	V	± 12
Drain Current ⁽¹⁾	I_D	A	-16
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	-65
Total Power Dissipation	P_D	W	18
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Case ⁽²⁾	$R_{\theta JC}$	°C / W	6.9
Thermal Resistance Junction-to-Ambient ⁽²⁾	$R_{\theta JA}$	°C / W	50

Drain-source Voltage
-20V
Drain Current
-16 Ampere

DFN2020-6L



● Static Parameter Characteristics (Tj=25°C Unless otherwise specified)

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =-250μA	V	-20	—	—
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V	μA	—	—	-1.0
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±12V, V _{DS} =0V	nA	—	—	±100
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =-250μA	V	-0.4	-0.7	-1.0
Static Drain-Source On-Resistance ⁽³⁾	R _{DS(on)}	V _{GS} = -4.5V, I _D =-7A	mΩ	—	16	18
		V _{GS} = -2.5V, I _D =-6A		—	19	22
		V _{GS} = -1.8V, I _D =-2.5A		—	25	45

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =-10V, V _{GS} =0V, f=1MHz	pF	—	2700	—
Output Capacitance	C _{oss}			—	680	—
Reverse Transfer Capacitance	C _{rss}			—	590	—

● Switching Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =-4.5V, V _{DD} =-10V, I _D =-1A ,R _{GEN} =1.2Ω	nS	—	11	—
Turn-on Rise Time	t _r		nS	—	35	—
Turn-off Delay Time	t _{D(off)}		nS	—	30	—
Turn-off fall Time	t _f		nS	—	10	—
Total Gate Charge	Q _g	V _{DS} =-6V, I _D =-10A V _{GS} =-4.5V	nC	—	35	—
Gate-Source Charge	Q _{gs}		nC	—	5	—
Gate-Drain Charge	Q _{gd}		nC	—	10	—

● Drian-Source Diode Characteristics

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage ⁽³⁾	V _{SD}	I _S =-16A, V _{GS} =0V	V	—	—	-1.2
Maximum Body-Diode Continuous Current ⁽³⁾	I _S	—	A	—	—	-16

Note :

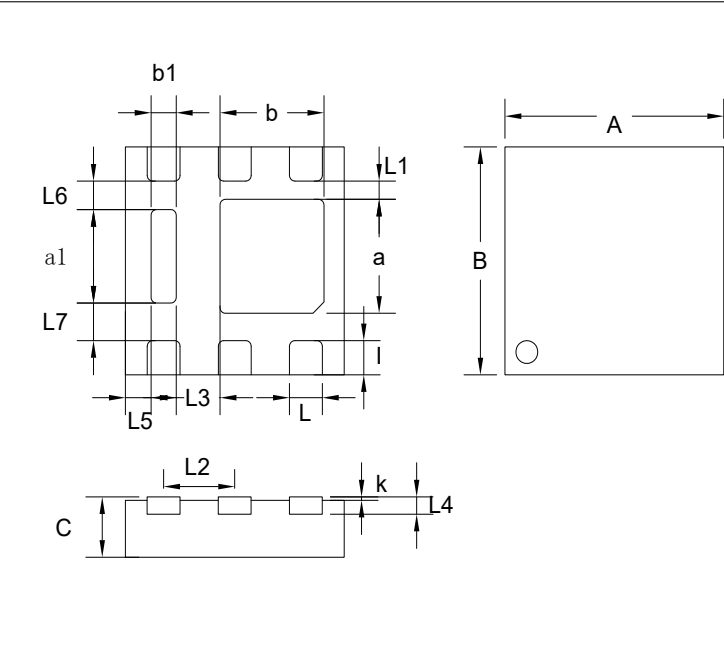
(1)Repetitive Rating: Pulse width limited by maximum junction temperature.

(2)Surface Mounted on FR4 Board, t ≤ 10 sec.

(3)Pulse test: Pulse width ≤ 300us, duty cycle ≤ 2%.

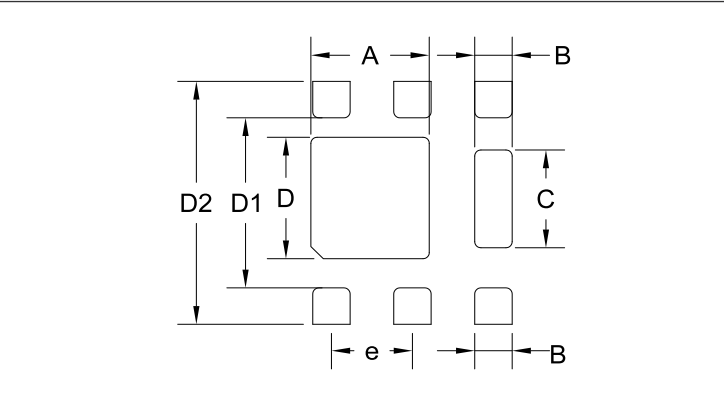
(4)Guaranteed by design, not subject to production.

● Package Outline Dimensions (DFN2020-6L)



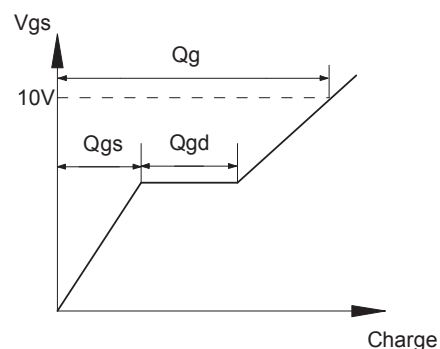
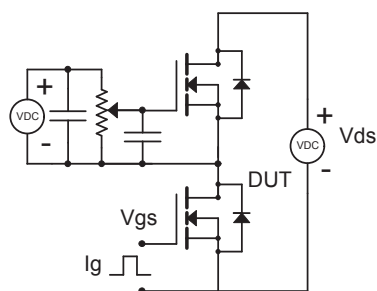
Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.90	2.10	0.075	0.083
B	1.90	2.10	0.075	0.083
C	0.50	0.65	0.020	0.026
L	0.25	0.35	0.010	0.014
L1	0.20MIN		0.008MIN	
L2	0.65 TYP		0.026 TYP	
L3	0.35TYP		0.014 TYP	
L4	0.152 TYP		0.006 TYP	
L5	0.12	0.32	0.005	0.013
L6	0.15	0.35	0.006	0.014
L7	0.25TYP		0.010TYP	
a	0.85	1.05	0.033	0.041
a1	0.46	0.66	0.018	0.026
b	0.80	1.0	0.031	0.039
b1	0.20	0.40	0.008	0.016
l	0.20	0.25	0.008	0.012
K	0	0.05	0	0.002

● Suggested Pad Layout

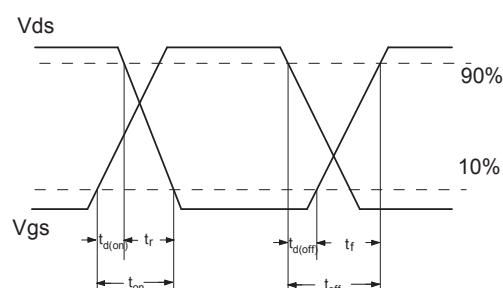
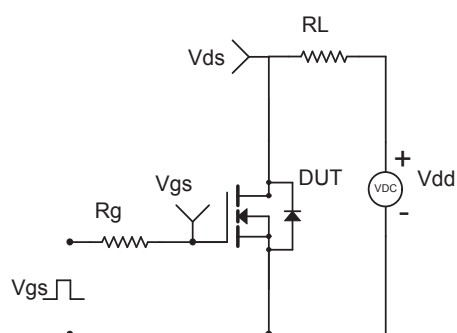


Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
B	0.30	0.50	0.012	0.020
C	0.56	0.76	0.022	0.030
D	0.95	1.15	0.037	0.045
D1	1.30	1.50	0.051	0.059
D2	2.20	2.40	0.087	0.094
e	0.55	0.75	0.022	0.030

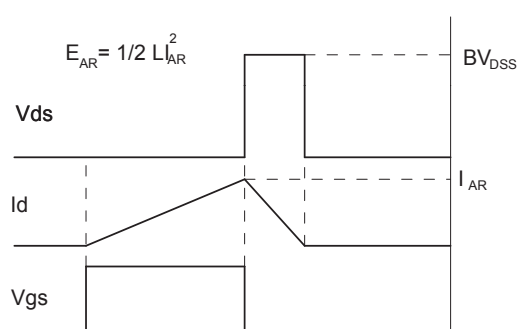
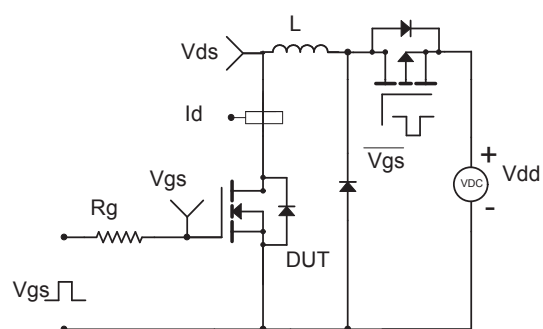
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



3. Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



4. Diode Recovery Test Circuit & Waveforms

