

DFN2020-6L Plastic-Encapsulate MOSFETS

Features

- $V_{DS}=20V$
- $I_D=8.7A$
- $R_{DS(on)}@V_{GS}=4.5V < 14.5m\Omega$
- $R_{DS(on)}@V_{GS}=2.5V < 19m\Omega$
- Advanced trench cell design
- Low Thermal Resistance
- Low Gate Charge

Drain-source Voltage
20V
Drain Current
8.7 Ampere

Applications

- Motor/Body Load Control
- DC-DC Converters
- Load Switch

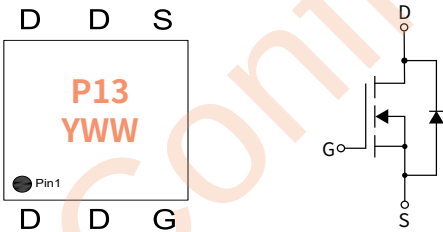
Mechanical Data

- 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



Marking: P13
Date Code: YWW



Ordering Information

PACKAGE	PACKAGE CODE	UNIT WEIGHT(g)	REEL(pcs)	BOX(pcs)	CARTON(pcs)	DELIVERY MODE
DFN2020-6L	R3	0.01	3000	30000	120000	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	I_D	A	8.7
Pulsed Drain Current ⁽¹⁾	I_{DM}	A	32
Total Power Dissipation	P_D	W	1.6
Junction temperature	T_J	°C	-55 ~+150
Storage temperature	T_{stg}	°C	-55 ~+150
Thermal Resistance Junction-to-Ambient ⁽²⁾	$R_{\theta JA}$	°C / W	80

● 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	0.5	0.7	1.2
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 4.5V, I _D =8A	mΩ	—	13	14.5
		V _{GS} = 2.5V, I _D =4A		—	17	19

● Dynamic Parameters

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, f=1MHZ	pF	—	782	—
Output Capacitance	C _{oss}			—	158	—
Reverse Transfer Capacitance	C _{rss}			—	115	—

● Switching Parameters

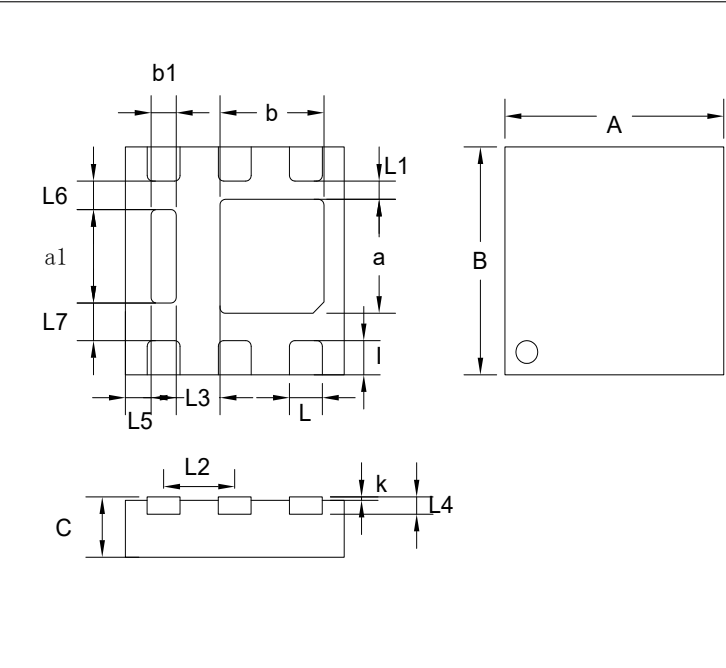
PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Turn-on Delay Time	t _{D(on)}	V _{GS} =4.5V, V _{DD} =10V, I _D =8A, R _{GEN} =3Ω, R _L =1.25Ω	nS	—	3	—
Turn-on Rise Time	t _r		nS	—	4.5	—
Turn-off Delay Time	t _{D(off)}		nS	—	28	—
Turn-off fall Time	t _f		nS	—	6	—
Total Gate Charge	Q _g	V _{DS} =10V, I _D =8A V _{GS} =4.5V	nC	—	7	—
Gate-Source Charge	Q _{gs}		nC	—	1	—
Gate-Drain Charge	Q _{gd}		nC	—	2.4	—

● Drian-Source Diode Characteristics

PARAMETER	SYMBOL	Condition	UNIT	Min	Typ	Max
Diode Forward Voltage	V _{SD}	I _S =8.7A, V _{GS} =0V	V	—	—	1.2
Maximum Body-Diode Continuous Current	I _S	—	A	—	—	8.7
Body Diode Reverse Recovery Time	t _{rr}	I _S = 8.7A, di/dt = 100 A / μs	nS	—	11	—
Body Diode Reverse Recovery Charge	Q _{rr}		nC	—	2.7	—

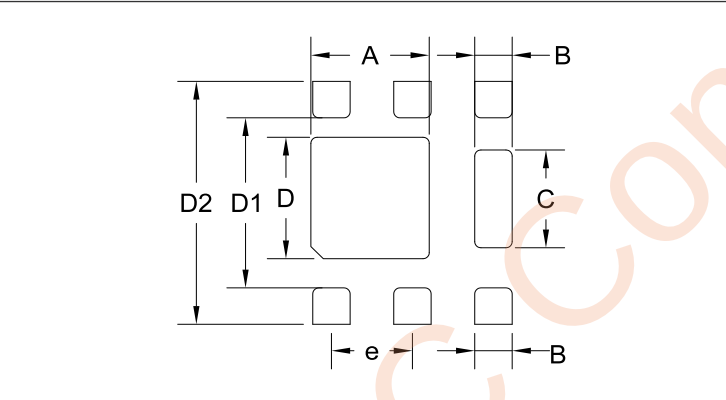
Note :
(1)Repetitive Rating: Pulse width limited by maximum junction temperature Tj(MAX)=150°C .Ratings are based on low frequency and duty cycles to keep initial TC =25°C .
(2)The value of RθJA is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C

● Package Outline Dimensions (DFN2020-6L)



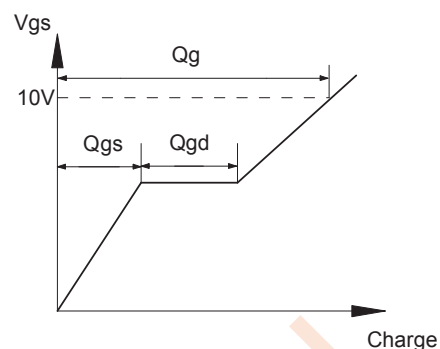
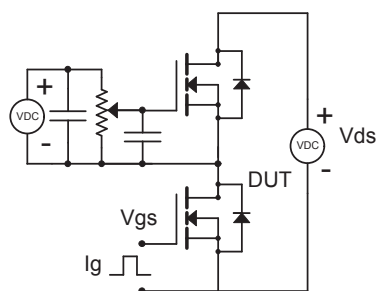
Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.90	2.10	0.075	0.083
B	1.90	2.10	0.075	0.083
C	0.50	0.60	0.020	0.024
L	0.25	0.35	0.010	0.014
L1	0.10	0.30	0.004	0.012
L2	0.65 TYP		0.026 TYP	
L3	0.35TYP		0.014 TYP	
L4	0.127 TYP		0.005 TYP	
L5	0.12	0.32	0.005	0.013
L6	0.15	0.35	0.006	0.014
L7	0.25TYP		0.010TYP	
a	0.75	0.85	0.030	0.033
a1	0.75	0.85	0.030	0.033
b	0.90	1.0	0.035	0.039
b1	0.25	0.35	0.010	0.014
l	0.30	0.40	0.012	0.016
K	0	0.05	0	0.002

● Suggested Pad Layout

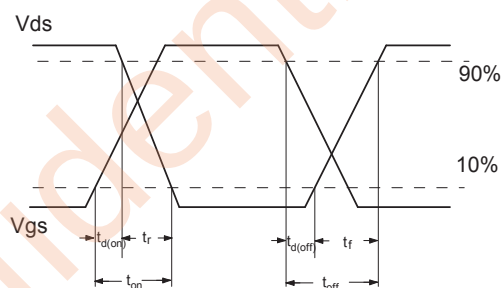
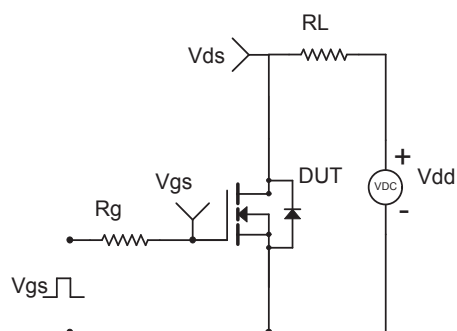


Symbol	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	0.90	1.10	0.035	0.043
B	0.30	0.50	0.012	0.020
C	0.56	0.76	0.022	0.030
D	0.95	1.15	0.037	0.045
D1	1.30	1.50	0.051	0.059
D2	2.20	2.40	0.087	0.094
e	0.55	0.75	0.022	0.030

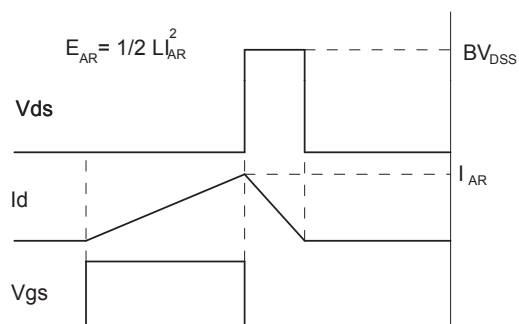
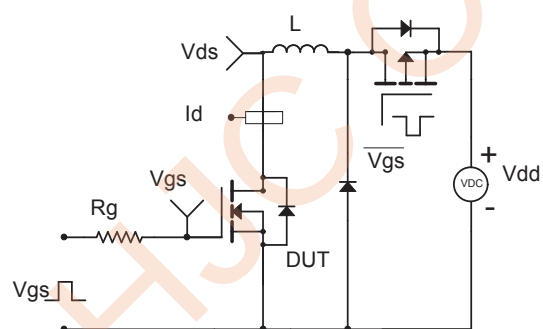
1. Gate Charge Test Circuit & Waveforms



2. Resistive Switching Test Circuit & Waveforms



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



4. Diode Recovery Test Circuit & Waveforms

