

MDD8205

Dual 20V N-Channel Enhancement Mode MOSFET

1. Description

This 20V N-channel MOSFET is a dual die type based on MDD's unique device design to achieve low RDS(on) and fast switching characteristics.

2. Features

- High dense cell design for extremely low RDS(ON)
- Exceptional on-resistance and maximum DC current capability

3. Application

- Load Switch for Portable Devices
- Battery Powered System
- DC-DC converter
- LCD Display inverter
- Portable Equipment

4. Absolute Maximum Ratings(T_A=25°C unless otherwise noted)

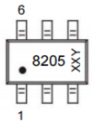
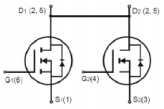
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current (Note 1)	I_D	5.0	A
Pulsed Drain Current (Note 1)	I_{DM}	25	A
Thermal Resistance, Junction-Ambient (Note 2)	$R_{\theta JA}$	80	°C/W
Power Dissipation	P_D	1.5	W
Junction Temperature	T_J	-55~+150	°C
Storage Temperature	T_{stg}	-55~+150	°C

- Stresses exceeding Maximum Ratings may damage the device.
- Maximum Ratings are stress ratings only.
- Functional operation above the Recommended Operating Conditions is not implied.
- Extended exposure to stresses above the recommended Operating Conditions may affect device reliability

Notes: 1.Pulse width limited by maximum allowable junction temperature

2.Surface Mounted on FR4 Board, t＜10 sec.

5. Pinning information

Pin	Symbol	Description	Simplified outline	Equivalent Circuit	Marking	Package
4,6	G	Gate			8205 XXY:Date Code	SOT-23-6L
1,3	S	Source				
2,5	D	Drain				

6. T_A=25°C unless otherwise specified

Symbol	Parameter		Condition	Min	Typ	Max	Unit
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		V_{GS}=0V, I_D=250μA	20	—	—	V
I_{GSS}	Gate-Source Leakage Current	Forward	V_{GS}=12V	—	—	100	nA
		Reverse	V_{GS}=-12V	—	—	-100	nA
I_{DSS}	Drain-Source Leakage Current		V_{DS}=20V, V_{GS}=0V	—	—	1	μA
$V_{GS(TH)}$	Gate Threshold Voltage		V_{DS}=VGS, I_D=250μA	0.4	0.65	1	V
$R_{DS(ON)}$	Drain-Source On-State Resistance		V_{GS}=4.5V, I_D =3A	—	22	30	mΩ
			V_{GS}=2.5V, I_D =2.5A	—	28	39	mΩ

7. Dynamic Electrical Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	V_{GS}=0V V_{DS}=10V f=1.0MHz	—	800	—	pF
C_{oss}	Output Capacitance		—	150	—	pF
C_{rss}	Reverse Transfer Capacitance		—	125	—	pF
Q_g	Total Gate Charge	V_{GS}=4.5V V_{DS}=10V I_D=3A	—	10	—	nC
Q_{gs}	Gate Source Charge		—	2.3	—	nC
Q_{gd}	Gate Drain Charge		—	2.5	—	nC

8. Switching Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
$t_{d(on)}$	Turn on Delay Time	V_{GS}=4.5V V_{DS} =10V I_D=3A R_G=3Ω	—	16	—	ns
t_r	Turn on Rise Time		—	5	—	ns
$t_{d(off)}$	Turn Off Delay Time		—	40	—	ns
t_f	Turn Off Fall Time		—	20	—	ns

9. Source Drain Diode Characteristics

Symbol	Parameter	Condition	Min	Typ	Max	Unit
V_{SD}	Drain-Source Diode Forward Voltage	I_S=5A, V_{GS}=0V	—	0.8	1.2	V

10.Test Circuits And Waveforms

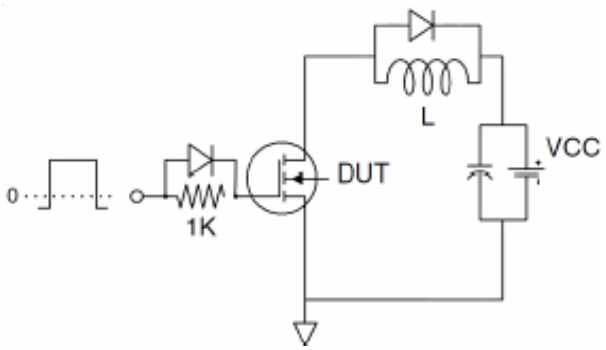


Figure 1. Gate Charge test Circuit

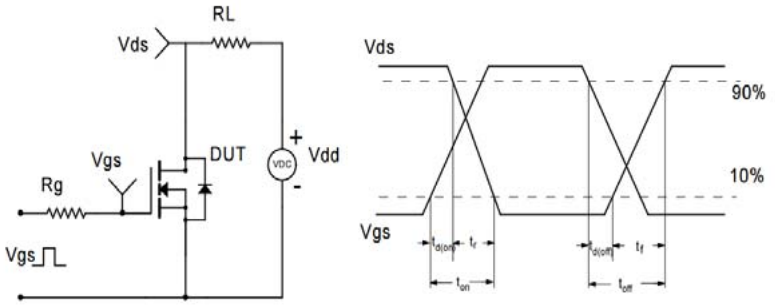


Figure 2. Switchingtime testcircuit & waveforms

The curve above is for reference only.

11.Electrical Characteristics Diagrams

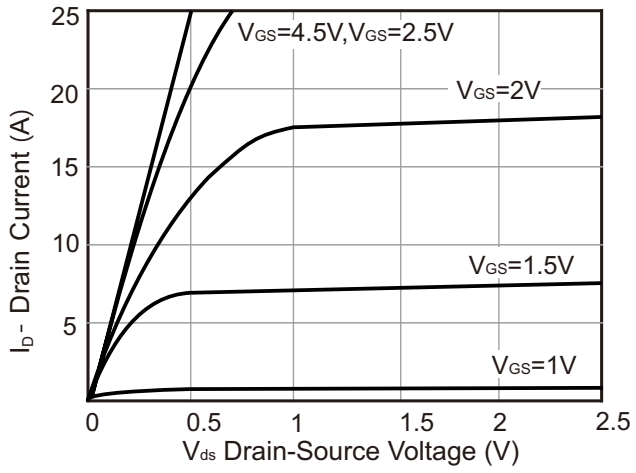


Figure 1. Typ. output characteristics

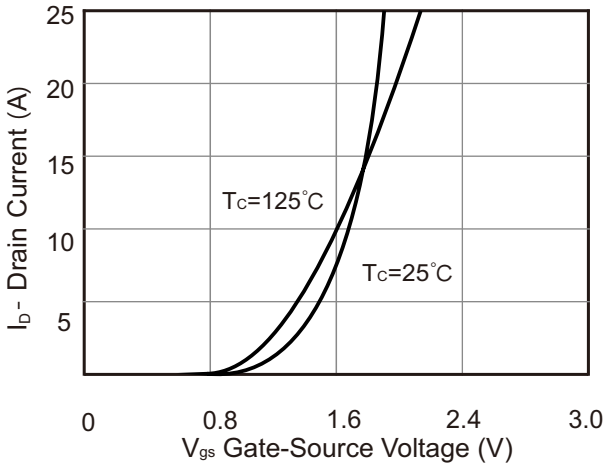


Fig 2. Transfer Charhacteristics

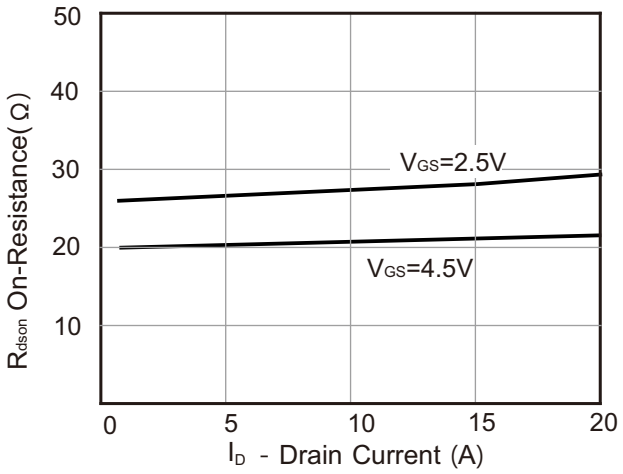


Fig 3. RDson vs I_D Characteristics

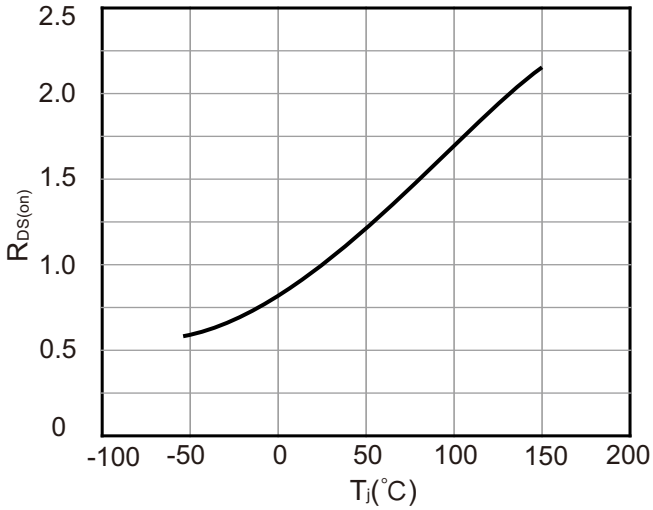


Fig 4. RDSon vs Junction Temperature

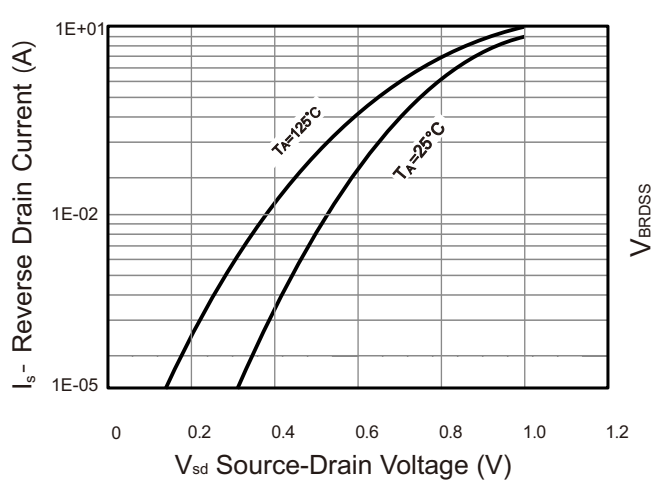


Fig 5. Source current Characteristics

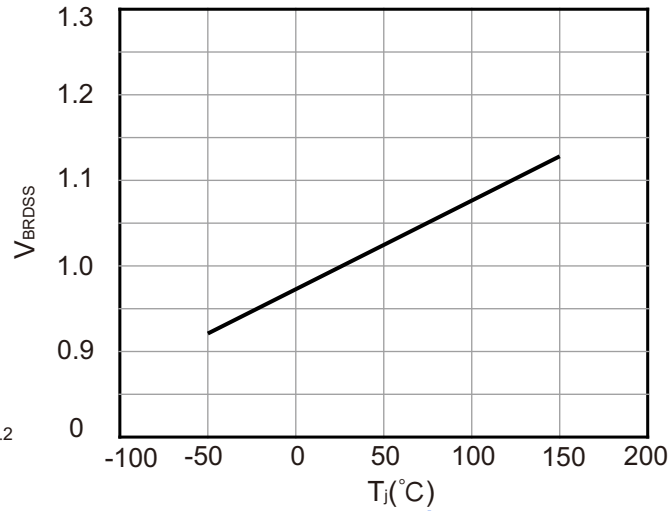
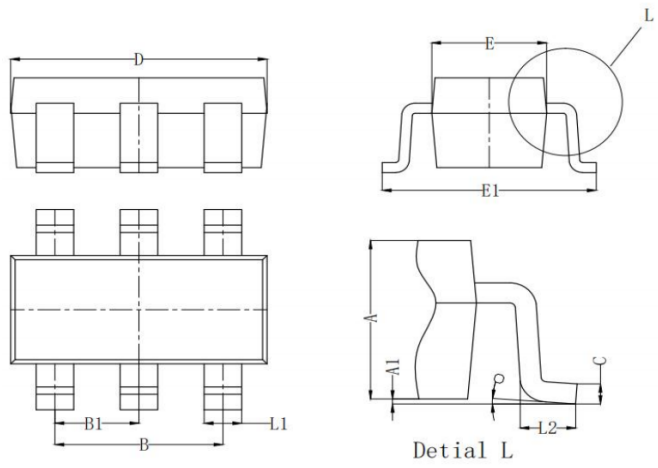


Fig 6. BVDSS vs Junction Temperature

The curve above is for reference only

12. Outline Drawing

SOT-23-6L Package Outline Dimensions



Symbol	Dim in mm		
	最小值	中间值	最大值
A	1.050	1.100	1.150
A1	0.000	0.050	0.100
B	1.800	1.900	2.000
B1	0.950 TYP		
C	0.100	0.150	0.200
D	2.820	2.920	3.020
E	1.500	1.600	1.700
E1	2.650	2.800	2.950
L1	0.300	0.400	0.500
L2	0.300	0.450	0.600
o	0°	4°	8°

13. Important Notice and Disclaimer

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