Dual N-Channel Enhancement Mode Power MOSFET

■ Features

- High Power and current handing capability
- Lead free product is acquired
- Surface Mount Package

■ Applications

- Battery protection
- Load switch
- Power management

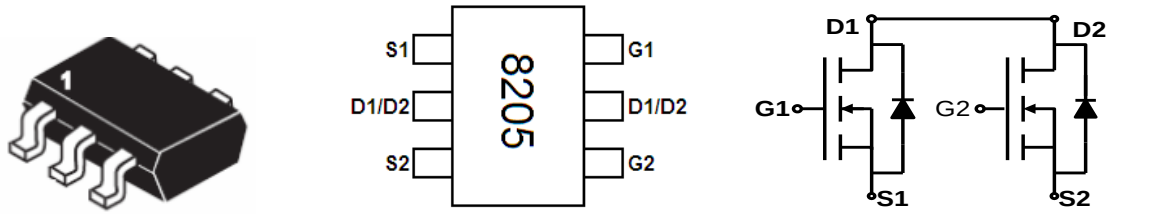
■ Package

- SOT-23-6

■ Ordering Information

Part Number	Storage Temperature	Package
LN8205	-55°C to 150°C	SOT-23-6

■ Pin Configuration



■ Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current-Continuous	I_D	4	A
Drain Current-Pulsed (Note 1)	I_{DM}	25	A
Maximum Power Dissipation	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃
Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	100	℃/W

■ Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	20	21		V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=19.5V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±10V,V_{DS}=0V			±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.5	0.7	1.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=4A		15	18	mΩ
		V_{GS}=2.5V, I_D=3A		19	23	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=4A		10		S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=8V,V_{GS}=0V, F=1.0MHz		600		pF
Output capacitance	C_{OSS}			330		pF
Reverse transfer capacitance	C_{RSS}			140		pF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V,I_D=1A V_{GS}=4V,R_{GEN}=10Ω		18		nS
Turn-on Rise Time	t_r			5		nS
Turn-Off Delay Time	$t_{d(off)}$			43		nS
Turn-Off Fall Time	t_f			20		nS
Total Gate Charge	Q_g	V_{DS}=10V,I_D=4A, V_{GS}=4.5V		11		nC
Gate-Source Charge	Q_{gs}			2.3		nC
Gate-Drain Charge	Q_{gd}			2.5		nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=2A		0.8	1.2	V
Diode Forward Current (Note 2)	I_S				2	A

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

■ Typical Performance Characteristics

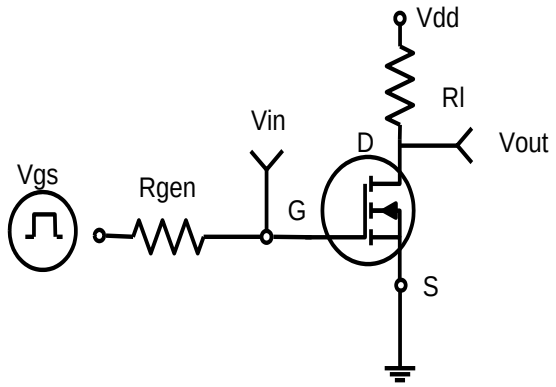


Figure 1: Switching Test Circuit

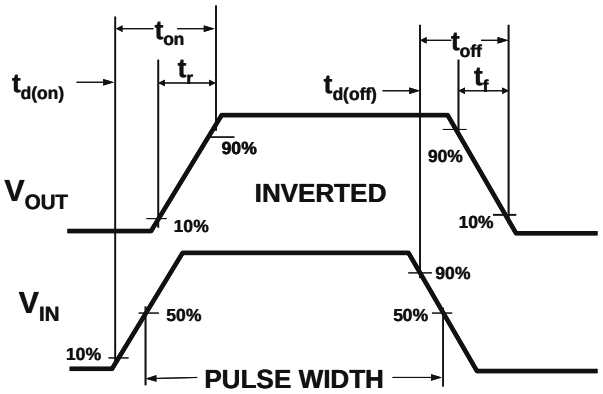
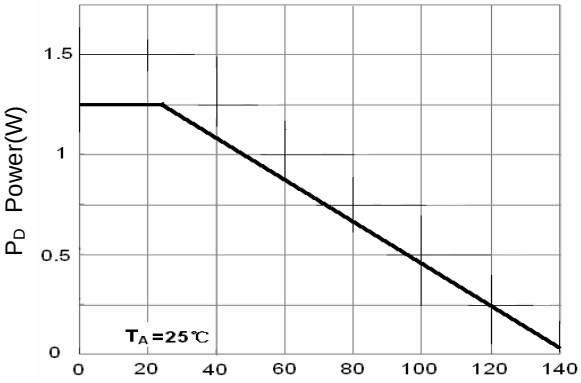
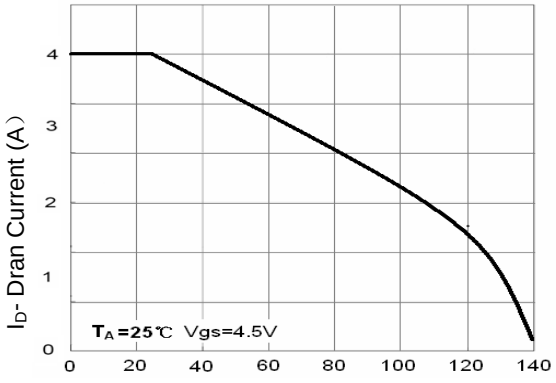


Figure 2: Switching Waveforms



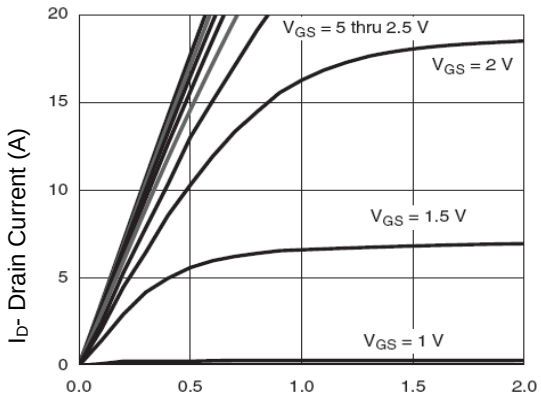
TJ-Junction Temperature (℃)

Figure 3 Power Dissipation



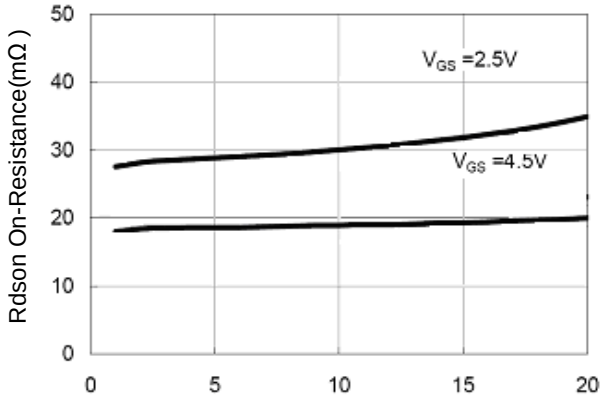
TJ-Junction Temperature (℃)

Figure 4 Drain Current



ID- Drain Current (A)

Figure 5 Output Characteristics



Vds Drain-Source Voltage (V)

Figure 6 Drain-Source On-Resistances

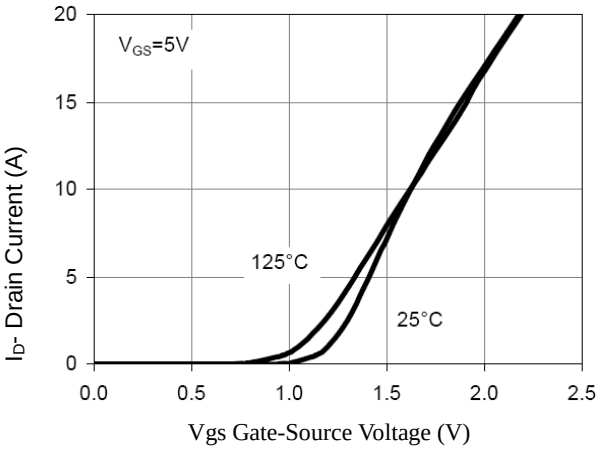


Figure 7 Transfer Characteristics

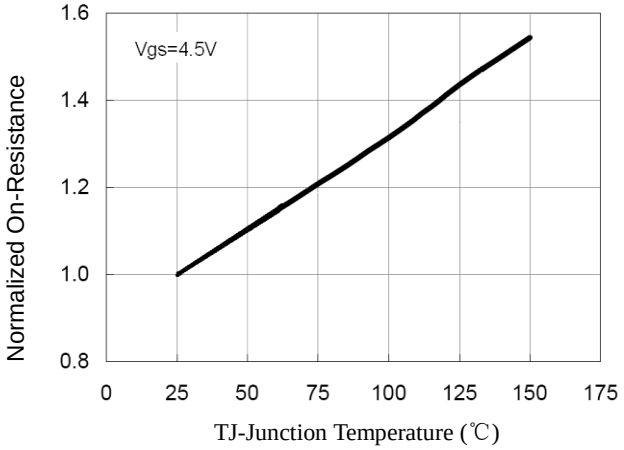


Figure 8 Drain-Source On-Resistances

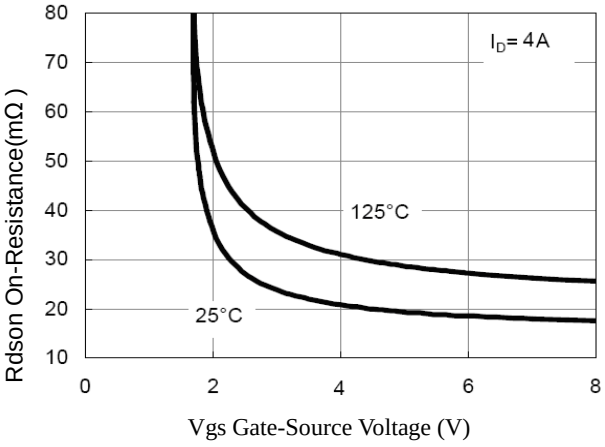


Figure 9 Rdson vs Vgs

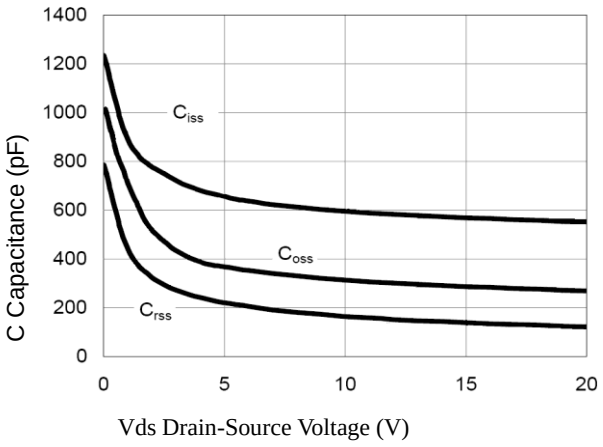


Figure 10 Capacitance vs Vds

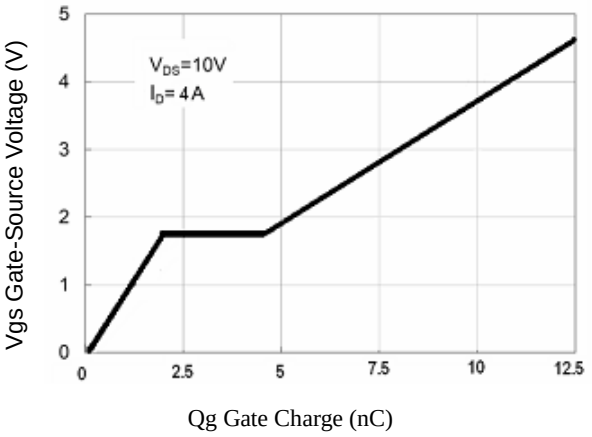


Figure 11 Gate Charge

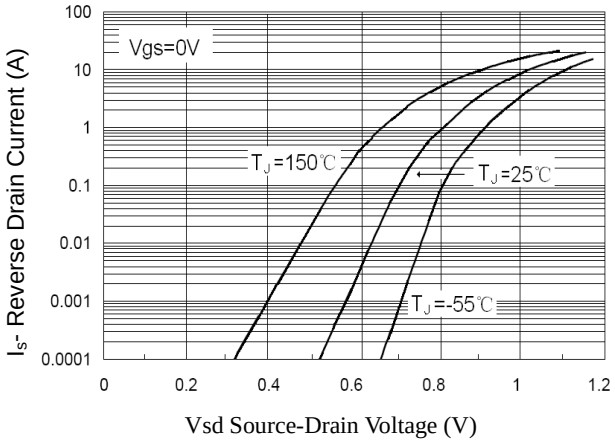


Figure 12 Source- Drain Diode Forward

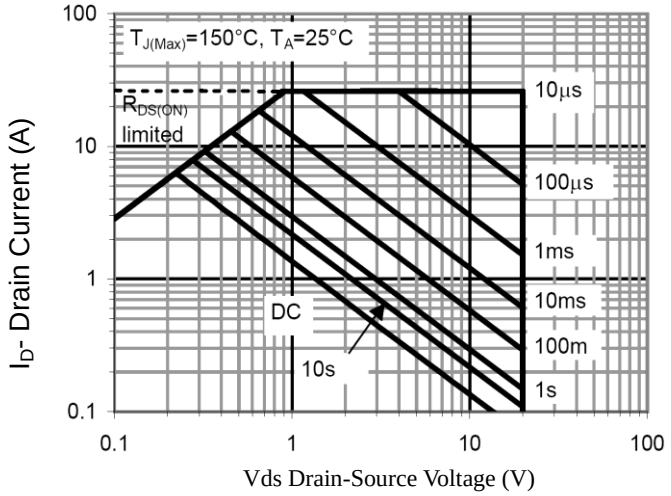


Figure 13 Safe Operation Area

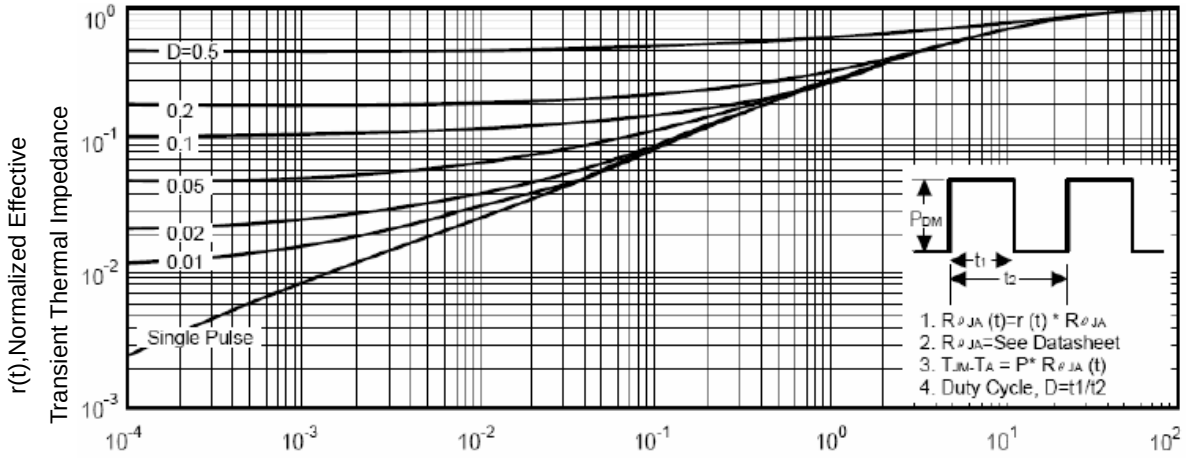
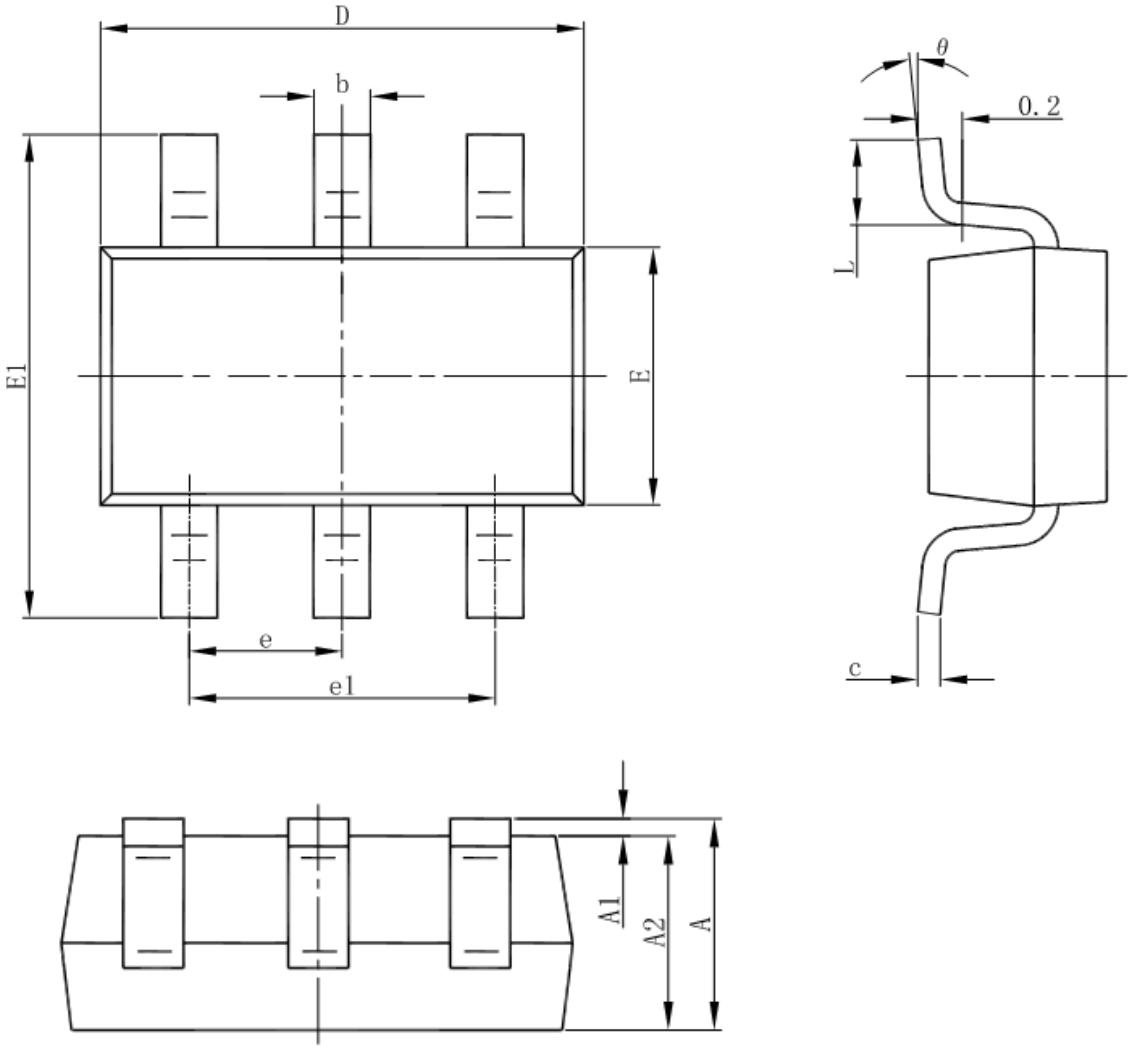


Figure 14 Normalized Maximum Transient Thermal Impedance

■ Package Information

- SOT-23-6



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°