FH8205

N-Channel Enhancement Mode

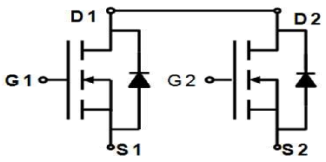
General Description

FH8205 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

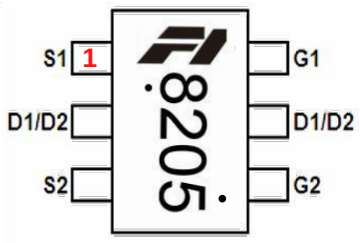
Product Summary

V_{DS}	16 V
I_D (at V_{GS}=4.5V)	4.5A
$R_{DS(ON)}$ (at V_{GS} = 4.5V)	< 23mΩ
$R_{DS(ON)}$ (at V_{GS} = 3.8V)	< 25mΩ
$R_{DS(ON)}$ (at V_{GS} = 2.5V)	< 31mΩ

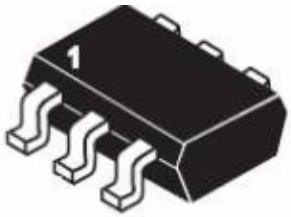
SOT23-6



Schematic diagram



Marking and pin Assignment



SOT23-6 top view

Absolute Maximum Ratings TA=25°C unless otherwise noted

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	16	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous @ T_J=25℃	I_D	4.5	A
Pulsed[b]	I_{DM}	18	A
Drain-Sourse Diode Forward Current[a]	I_S	2.5	A
Maximum Power Dissipation[a]	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Parameter	Symbol	Limit	Unit
Thermal Resistance,Junction-to-Ambient [a]	$R_{\theta JA}$	100	℃/W

Electrical Characteristics (TA=25℃unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ[c]	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=250μA	16	18	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V,V_{GS}=0V	-	-	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V,V_{DS}=0V	-	-	±100	nA
On Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=250μA	0.5	0.7	0.9	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V, I_D=4.5A	-	18	23	mΩ
		V_{GS}=3.8V, I_D=4.0A	-	19	25	mΩ
		V_{GS}=2.5V, I_D=3.5A	-	24	31	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V,I_D=7A	-	9.2	-	S
Dynamic Characteristics						
Input Capacitance	C_{lss}	V_{DS}=8V, V_{GS}=0V, F=1.0MHz	-	498	-	pF
Output Capacitance	C_{oss}		-	89	-	pF
Reverse Transfer Capacitance	C_{rss}		-	67	-	pF
Switching Characteristics						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V, I_D=1A V_{GS}=4.5V, R_{GEN}=10Ω , R_L=10Ω	-	11	-	nS
Turn-on Rise Time	t_r		-	23	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	29	-	nS
Turn-Off Fall Time	t_f		-	8	-	nS
Total Gate Charge	Q_g	V_{DS}=10V, I_D=4A, V_{GS}=4.5V	-	6	-	nC
Gate-Source Charge	Q_{gs}		-	2	-	nC
Gate-Drain Charge	Q_{gd}		-	2.3	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,I_S=1.7A	-	-	1.2	V

Notes:

a. Surface Mounted on FR4 Board ,T<10 sec ;

b. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.

c. Guaranteed by Design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

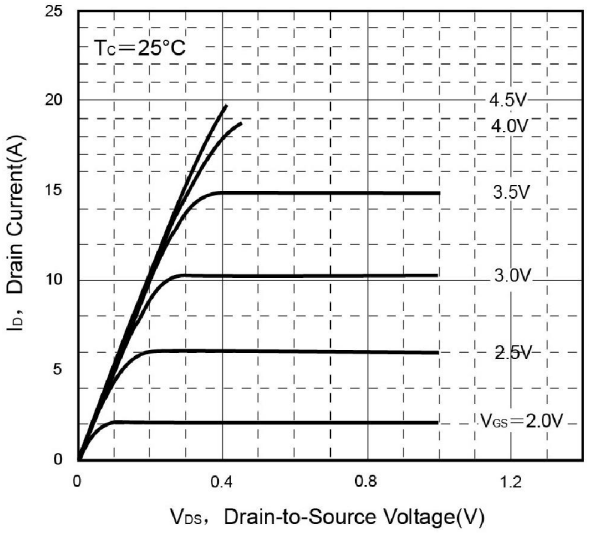


Figure 1: output characteristics (Tc=25°C)

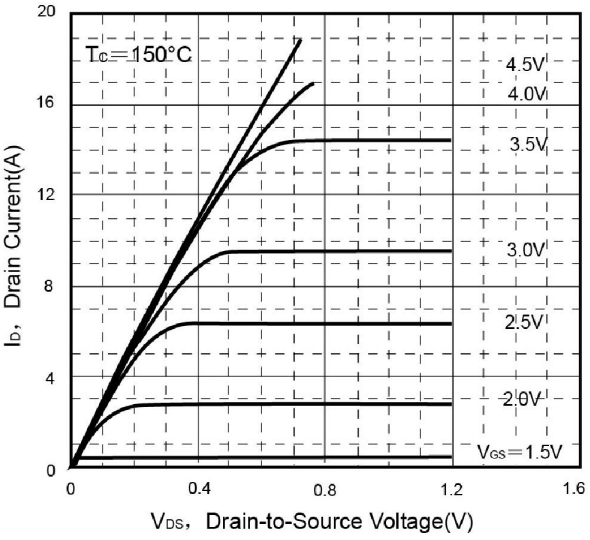


Figure 2: output characteristics (Tc=150°C)

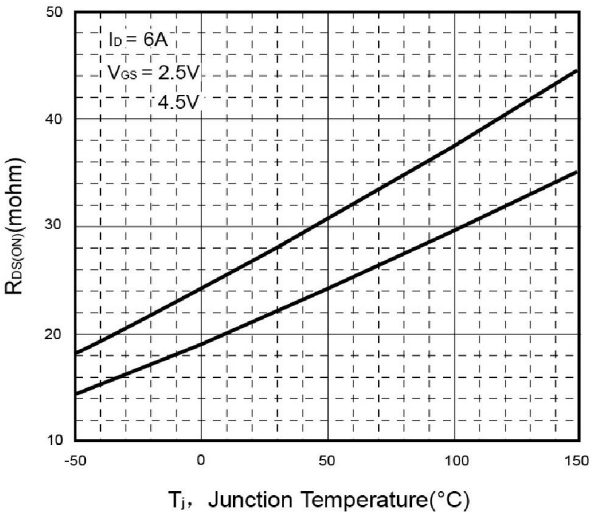


Figure 3: On-Resistance Variation with Temoerature

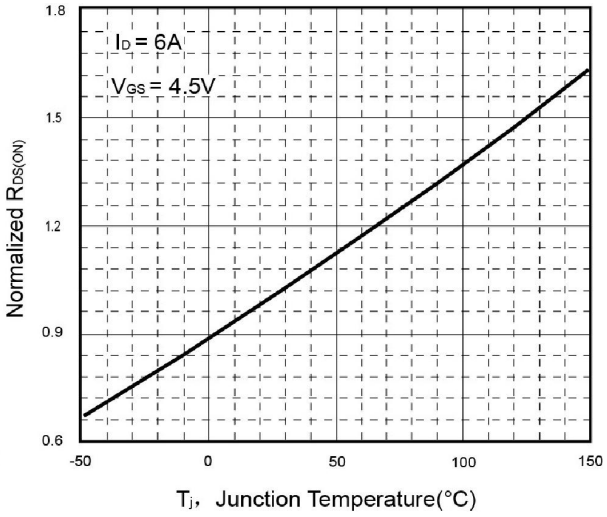


Figure 4: On-Resistance Variation with Temoerature

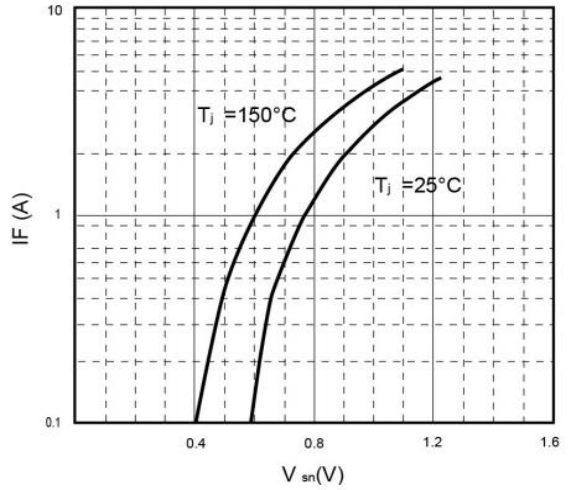


Figure 5: Body Diode Forward Voltage Cariation with Source Current

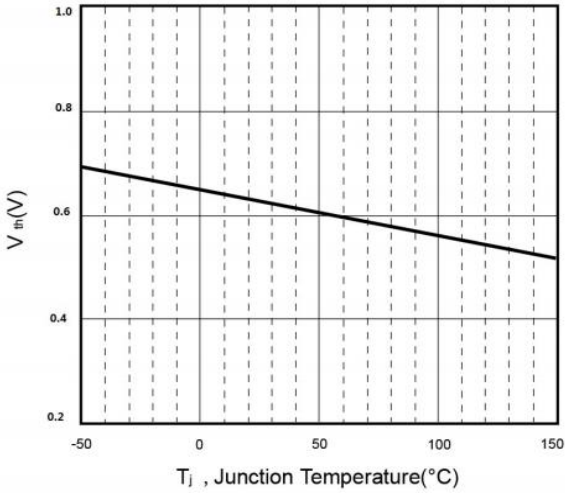


Figure 6: Vth (V) Variation with Temoerature

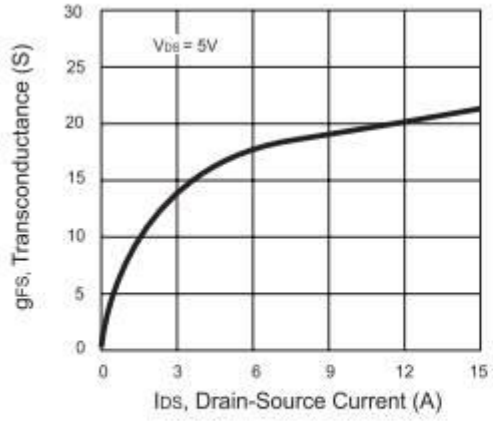


Figure 7. Transconductance Variation with Drain Current

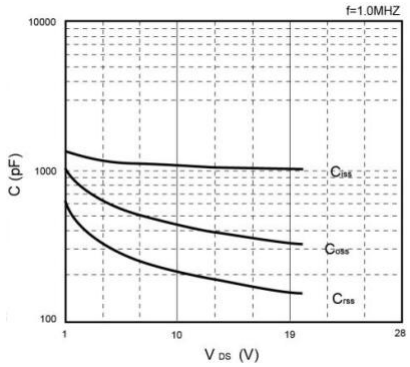


Figure 8 : capacitance characteristics

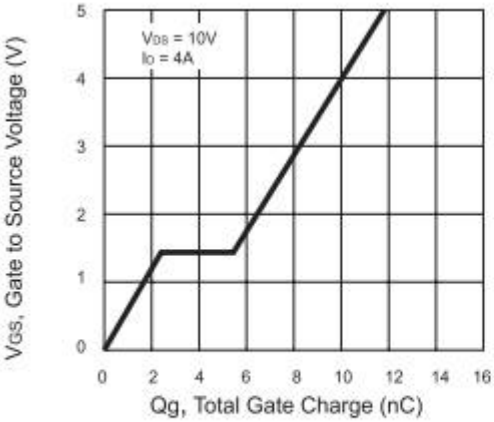


Figure 9. Gate Charge

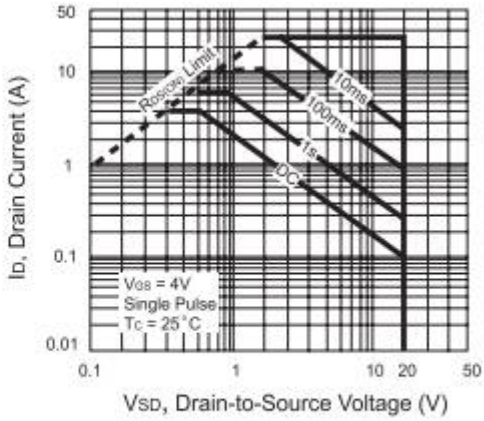


Figure 10. Maximum Safe Operating Area

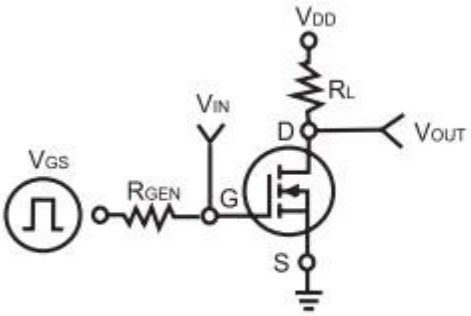


Figure 11. Switching Test Circuit

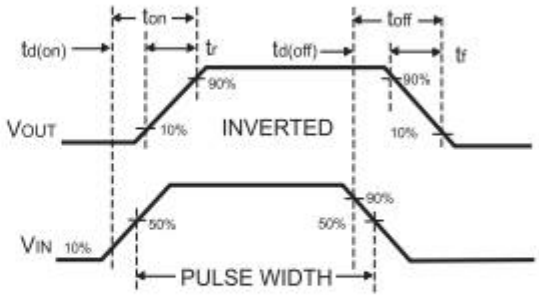


Figure 12. Switching Waveforms

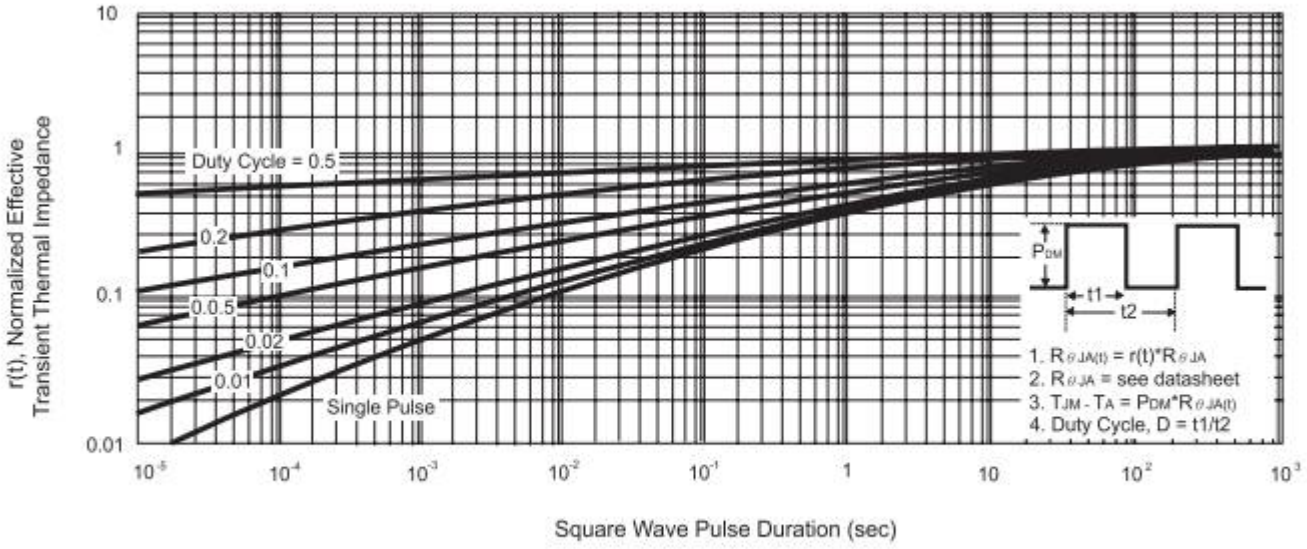
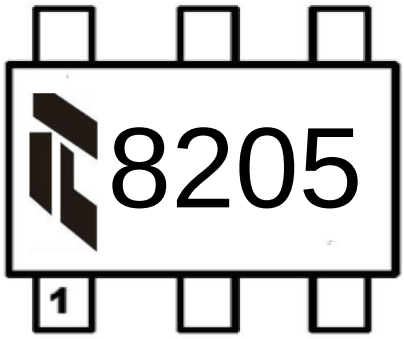


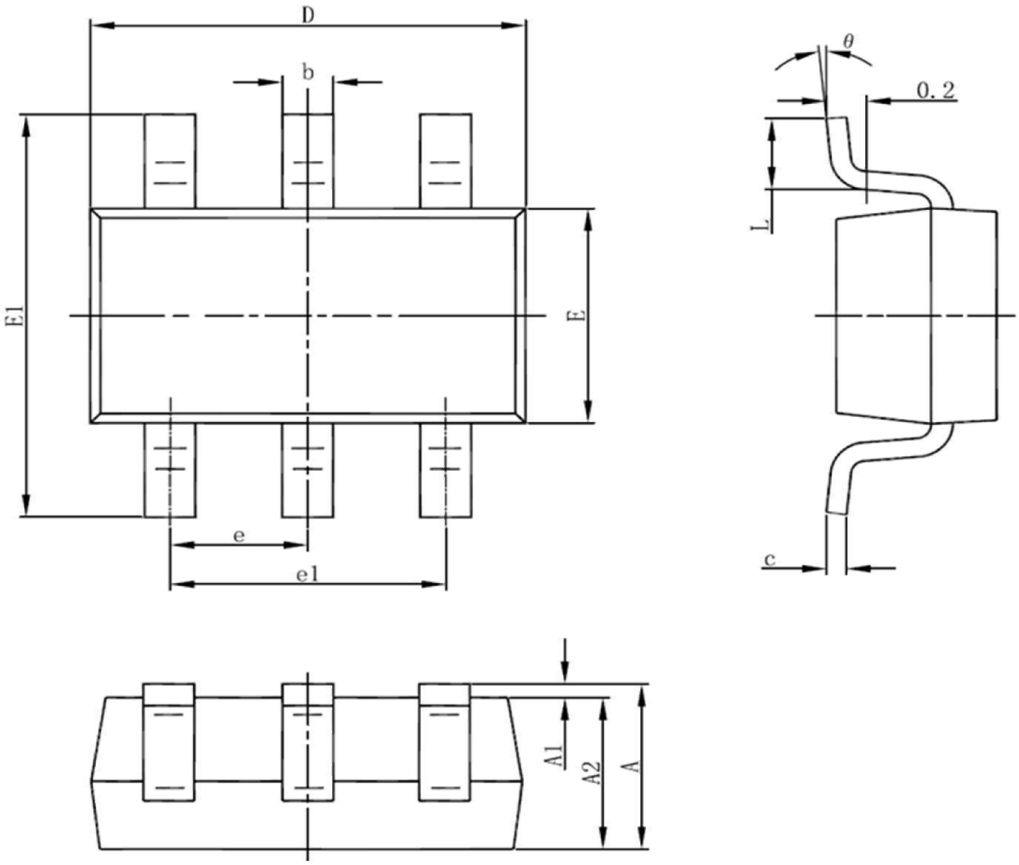
Figure 13. Normalized Thermal Transient Impedance Curve

MARKING DESCRIPSION : SOT23-6



Note: The printing points above and below the product model are the internal identification of the company. Each batch of products may be in different locations.

Package Information ：SOT23-6



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°