

FH8205B

N-Channel Enhancement Mode

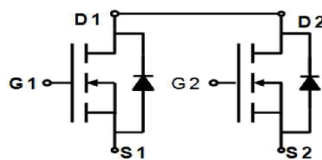
General Description

FH8205B 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.

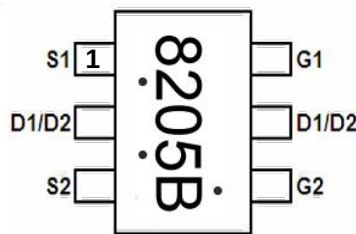
Product Summary

V_{DS}	16 V
I_D (at $V_{GS}=4.5V$)	7.0 A
$R_{DS(ON)}$ (Typ.)= 12 m Ω	@ V_{GS} = 4.5 V
$R_{DS(ON)}$ (Typ.)= 13 m Ω	@ V_{GS} = 3.8 V
$R_{DS(ON)}$ (Typ.)= 15 m Ω	@ V_{GS} = 2.5 V

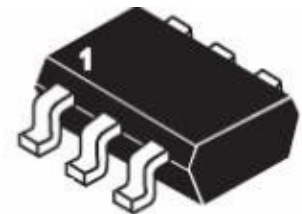
SOT23-6



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 @ $T_J=25^\circ C$	I_D	7.0	A
Pulsed ^b	I_{DM}	28	A
Drain-Source Diode Forward Current ^a	I_S	7.0	A
Maximum Power Dissipation ^a	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^\circ C$

Thermal Characteristic

Parameter	Symbol	Limit	Unit
Thermal Resistance,Junction-to-Ambient ^a	$R_{\theta JA}$	92	$^\circ C/W$

Electrical Characteristics (TA=25 °C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ [†]	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =250μA	16	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =15V,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 =4.0A	-	12	16	mΩ
		V _{GS} =3.8V, I _D =4.0A	-	13	17	mΩ
		V _{GS} =2.5V, I _D =2.0A	-	15	19	mΩ
Forward Transconductance	g _{FS}	V _{DS} =5V,I _D =4A	-	12	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =8V, V _{GS} =0V, F=1.0MHz	-	613	-	pF
Output Capacitance	C _{oss}		-	311	-	pF
Reverse Transfer Capacitance	C _{rss}		-	126	-	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	-	18	-	nS
Turn-on Rise Time	t _r		-	23	-	nS
Turn-Off Delay Time	t _{d(off)}		-	69	-	nS
Turn-Off Fall Time	t _f		-	8	-	nS
Total Gate Charge	Q _g	V _{DS} =10V, I _D =4A, V _{GS} =4.5V	-	9.7	-	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 =1.0A	-	-	1.2	V

Notes:

- Surface Mounted on FR4 Board ,T<10 sec ;
- Pulse Test: Pulse Width $\leq 300 \mu s$, Duty Cycle $\leq 2\%$.
- Guaranteed by Design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

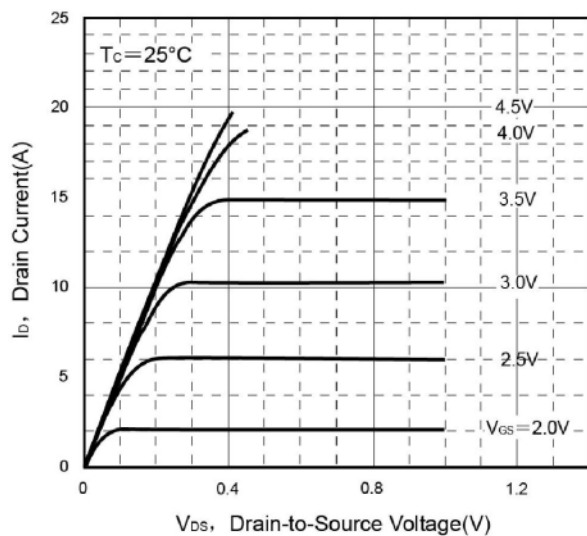
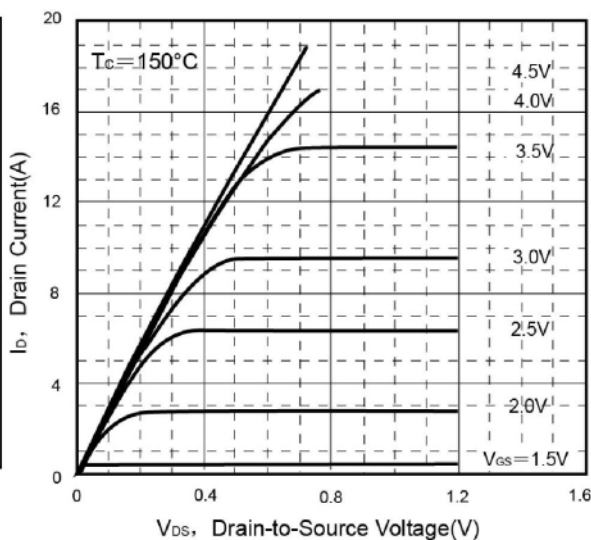
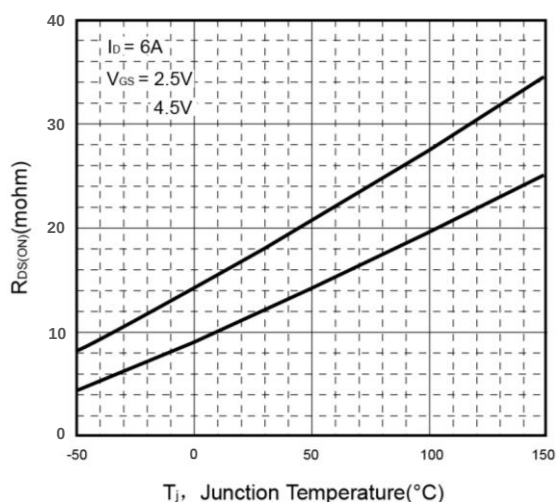
Figure1: output characteristics ($T_c=25^\circ\text{C}$)Figure 2: output characteristics ($T_c=150^\circ\text{C}$)

Figure3: On-Resistance Variation with Temoerature

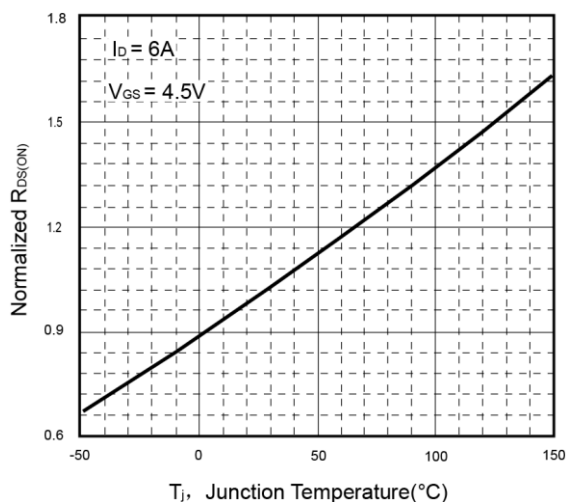


Figure4: On-Resistance Variation with Temoerature

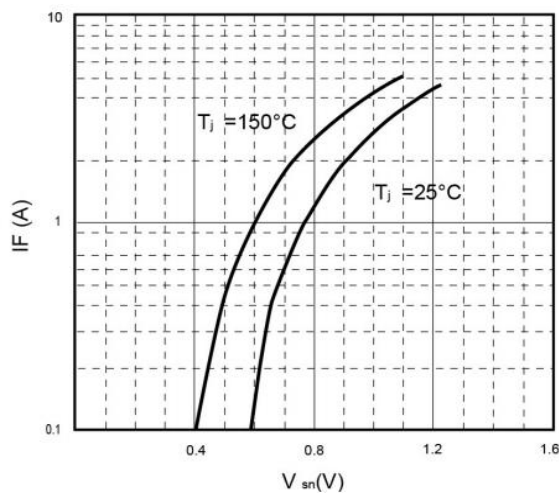
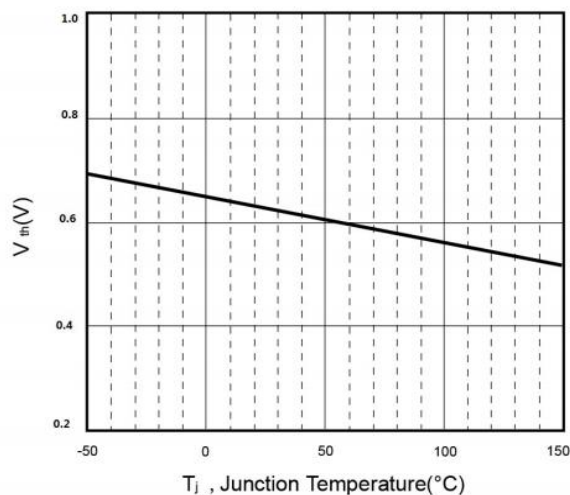


Figure5: Body Diode Forward Voltage Variation with Source Current

Figure 6: V_{th} (V) Variation with Temoerature

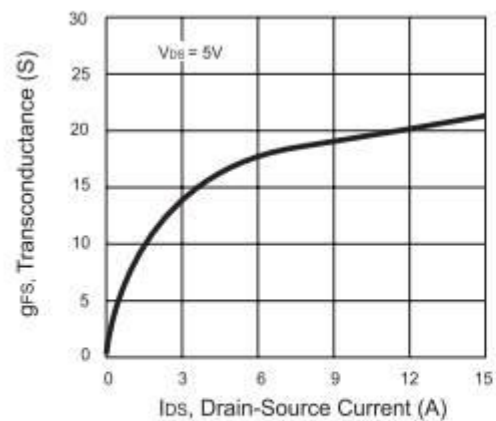


Figure 7. Transconductance Variation with Drain Current

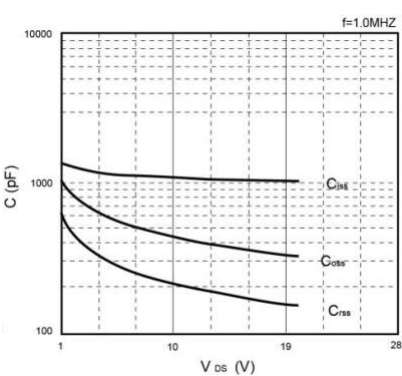


Figure 8 :capacitance characteristics

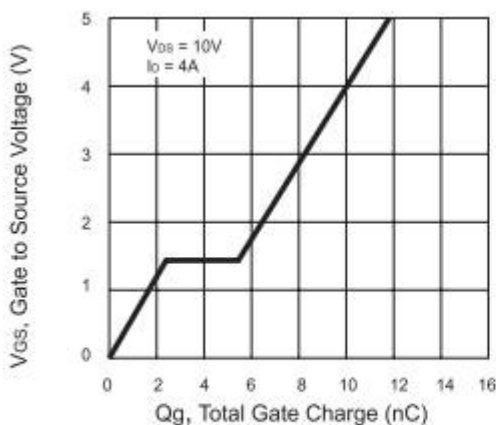


Figure 9. Gate Charge

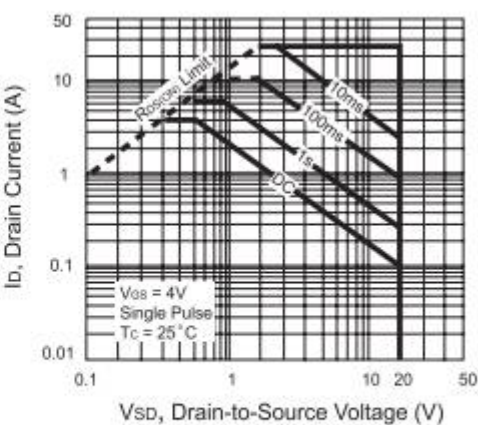


Figure 10. Maximum Safe Operating Area

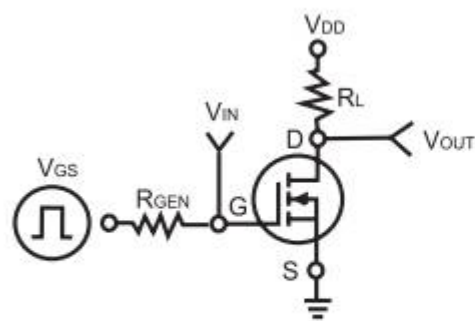


Figure 11. Switching Test Circuit

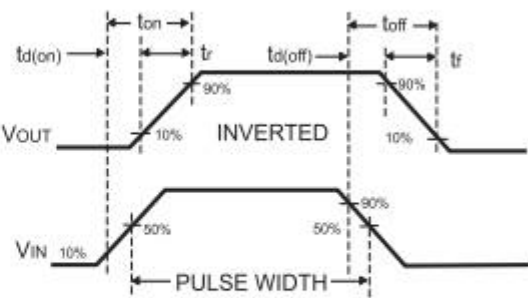


Figure 12. Switching Waveforms

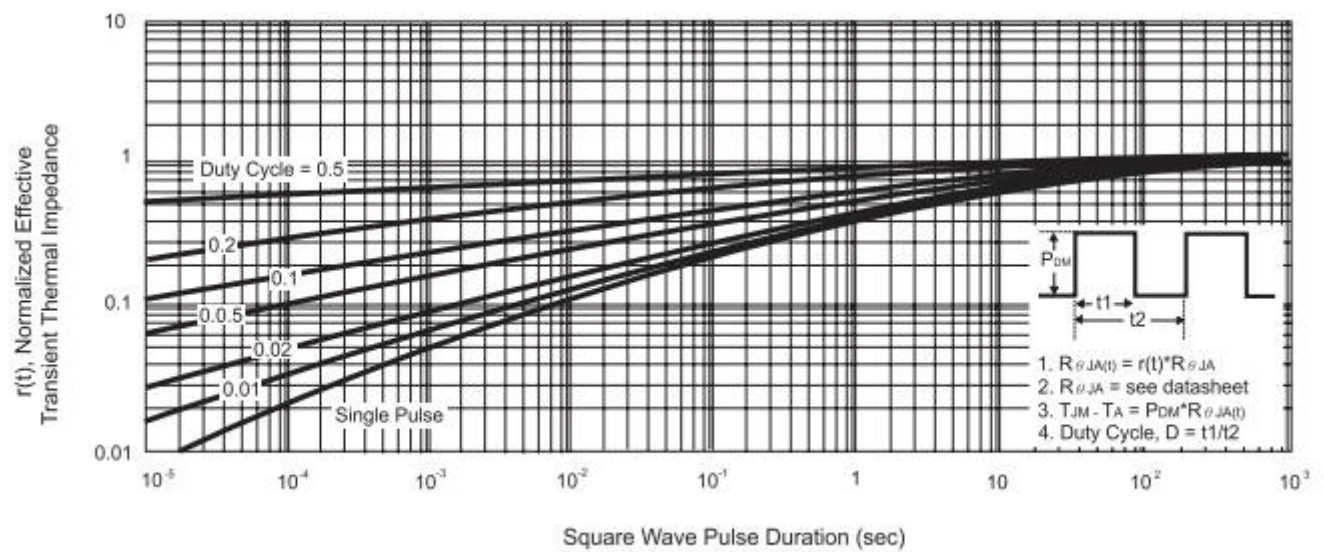
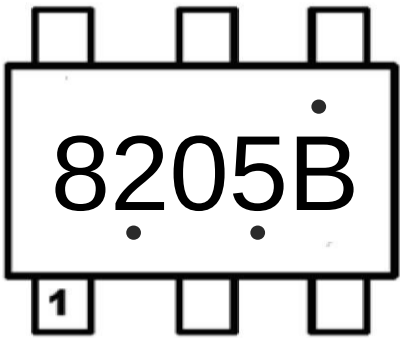


Figure 13. Normalized Thermal Transient Impedance Curve

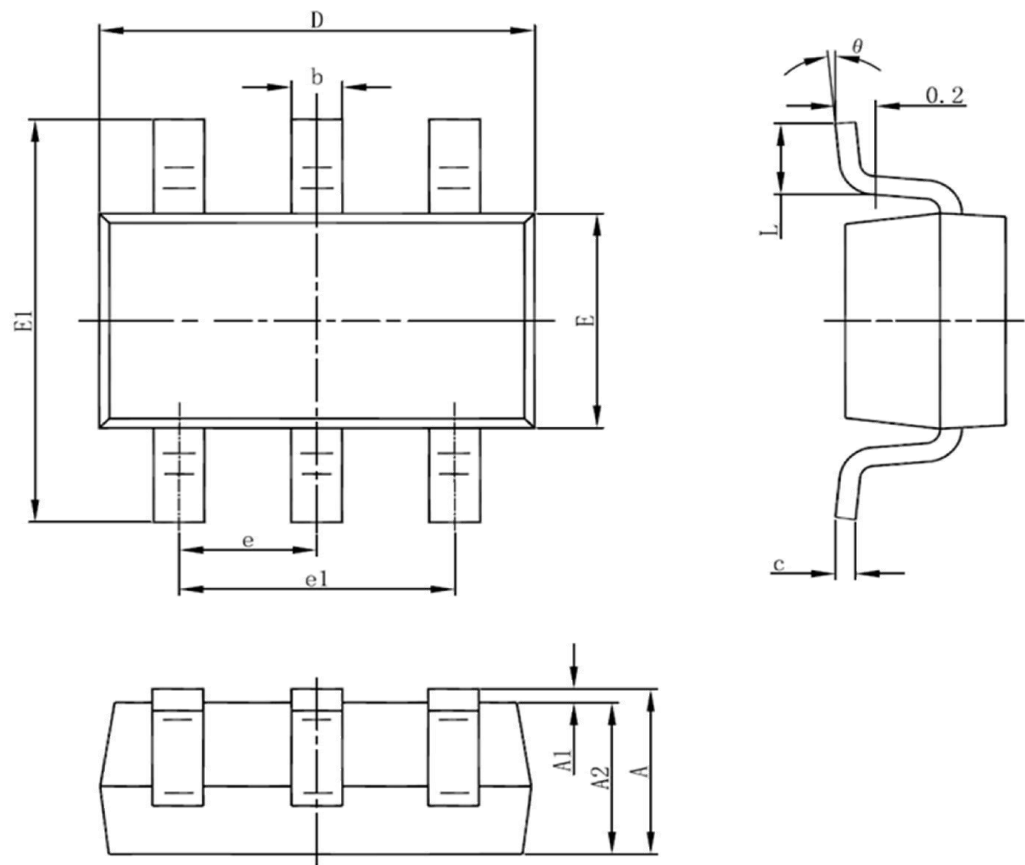
MARKING DESCRIPTION

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°