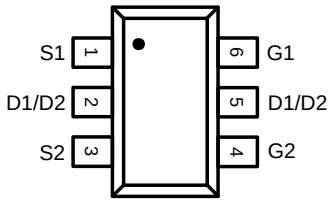
N-Channel Enhancement Mode MOSFET

GENERAL DESCRIPTION

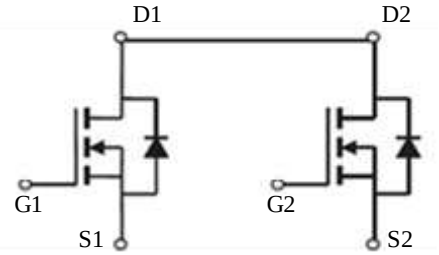
The 8205A6 uses advanced trench technology to provide excellent RDS(ON), low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

FEATURES

VDS = 20V,ID = 6A
RDS(ON) < 21 mΩ @ VGS=4.5V
RDS(ON) < 27 mΩ @ VGS=2.5V
Available in a 6-Pin SOT23-6 Package



SOT-23-6L



Ordering Number	Package type
8205A6S	SOT23-6L

Absolute Maximum Ratings (TA=25℃)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current, VGS @ 4.5V	ID@TA=25℃	6	A
Drain Current, VGS @ 4.5V	ID@TA=70℃	4.8	A
Pulsed Drain Current	I_{DM}	26	A
MAx Power Dissipation	P_D@TA=25℃	2	W
Storage Temperature Range	T_{STG}	-55 To 150	℃
Junction Temperature	T_J	150	℃
Thermal Resistance, Junction-to -ambient	$R_{\theta JA}$	62.5	℃/W

ELECTRICAL CHARACTERISTICS

(TA = 25°C, unless otherwise specified.)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V	I_D=250μA	20			V
Drain-Source Leakage Current(T_j=25℃)	I_{DSS}	V_{DS}=20V	V_{GS}=0V			1	μA
Drain-Source Leakage Current(T_j=70℃)	I_{DSS}	V_{DS}=20V	V_{GS}=0V			25	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±12V	V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}	I_D=250μA	0.5		1.2	V
Static Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=4.5V	I_D=6.0A		21	27	mΩ
		V_{GS}=2.5V	I_D=4.0A		27	37	mΩ
Forward Transconductance	g_{FS}	V_{DS}=10V	I_D=6.0A		6		S
Forward On Voltage	V_{SD}	V_{GS}=0V	I_S=1.7A			1.2	V
Input Capacitance	C_{iss}	V_{DS}=20V f=1.0MHz	V_{GS}=0V		570	910	pF
Output Capacitance	C_{oss}				90		pF
Reverse Transfer Capacitance	C_{rss}				85		pF
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=10V V_{GS}=10V R_D=10Ω	I_D=1A R_G=3.3Ω		4.2		ns
Rise Time	t_r				09		ns
Turn-off Delay Time	$t_{d(off)}$				23		ns
Fall Time	t_f				3.5		ns

Notes:

1 Surface Mounted on FR4 Board, t ≤ 10 sec.

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

Typical Characteristics

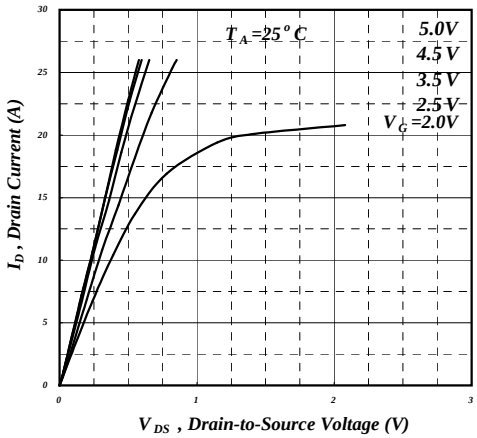


Fig.1 Typical Output Characteristics

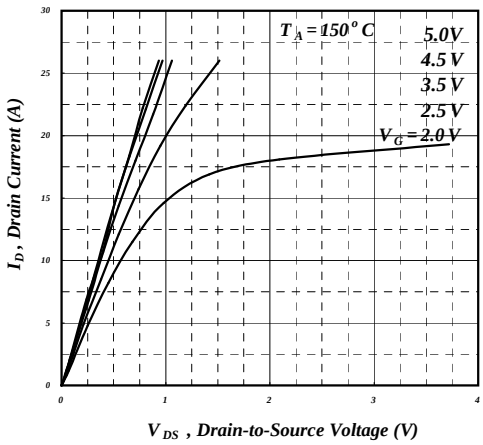


Fig.2 Typical Output Characteristics

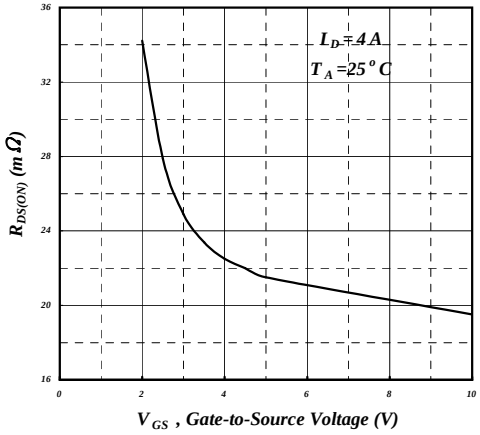


Fig.3 On-Resistance v.s. Gate Voltage

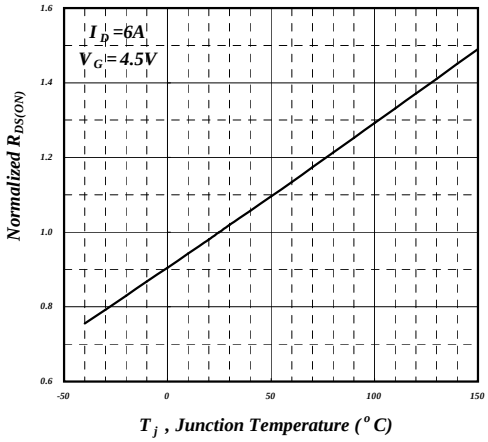


Fig.4 Normalized On-Resistancev.s. Temperature

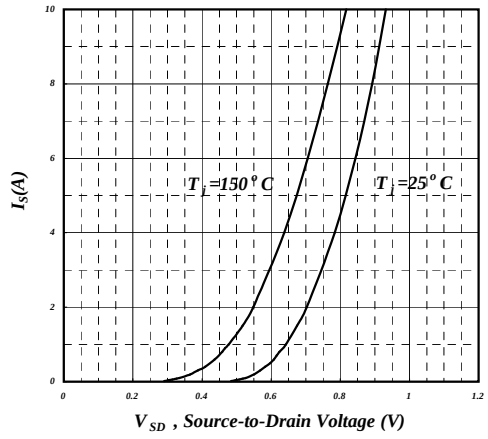


Fig.5 Forward Characteristic of Reverse Diode

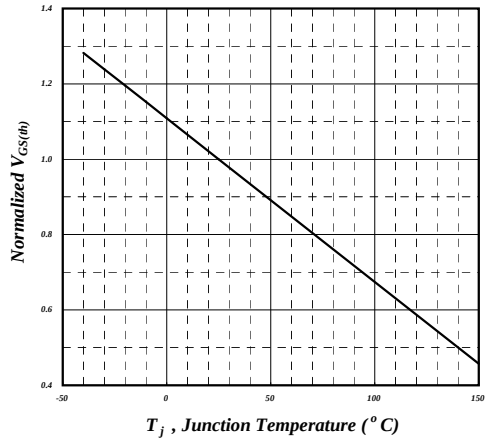


Fig.6 Gate Threshold Voltage v.s. Junction Temperature

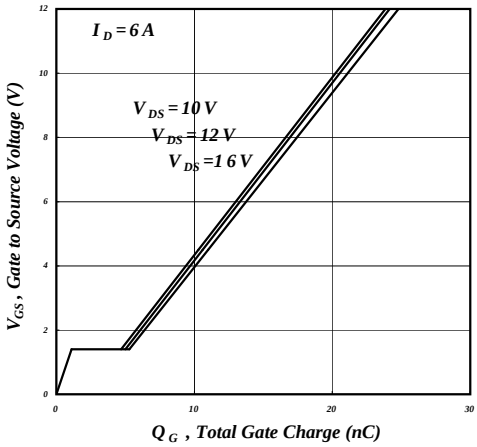


Fig.7 Junction Temperature

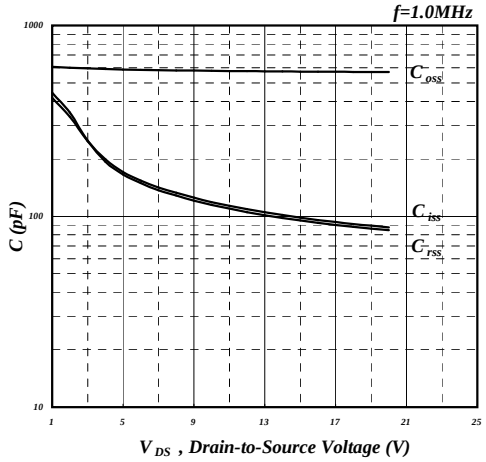


Fig.8 Typical Capacitance Characteristics

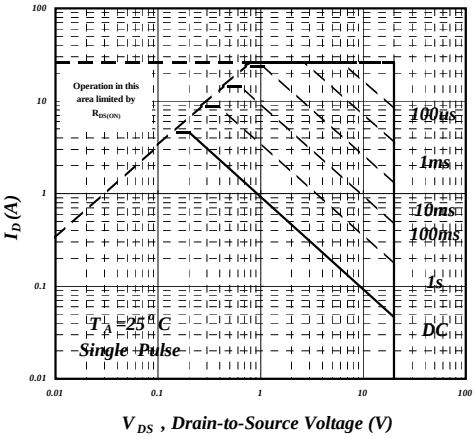


Figure 9 Maximum Safe Operating Area

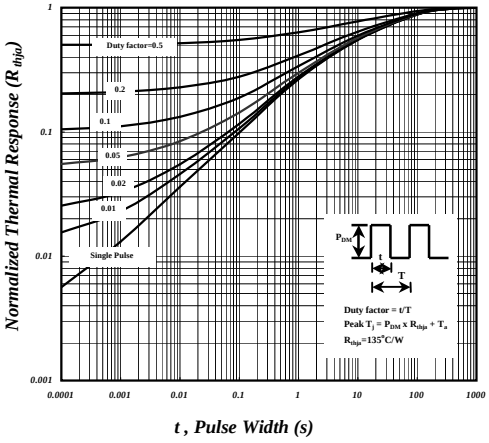


Figure 10 Effective Transient Thermal Impedance

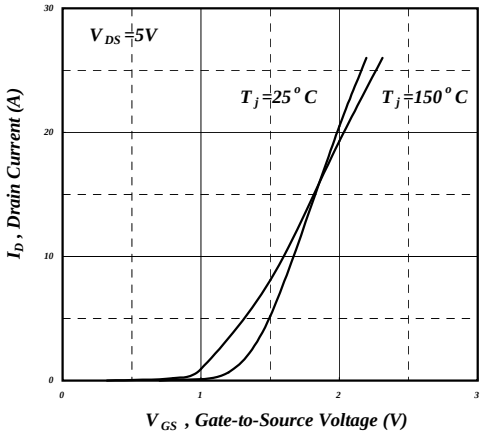


Fig 11. Transfer Characteristics

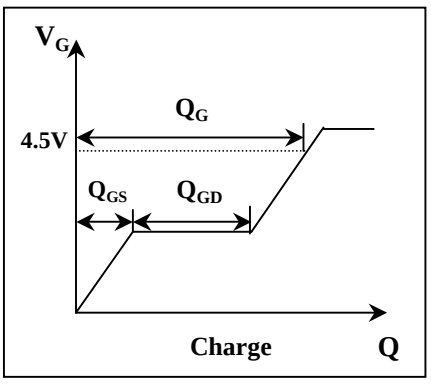
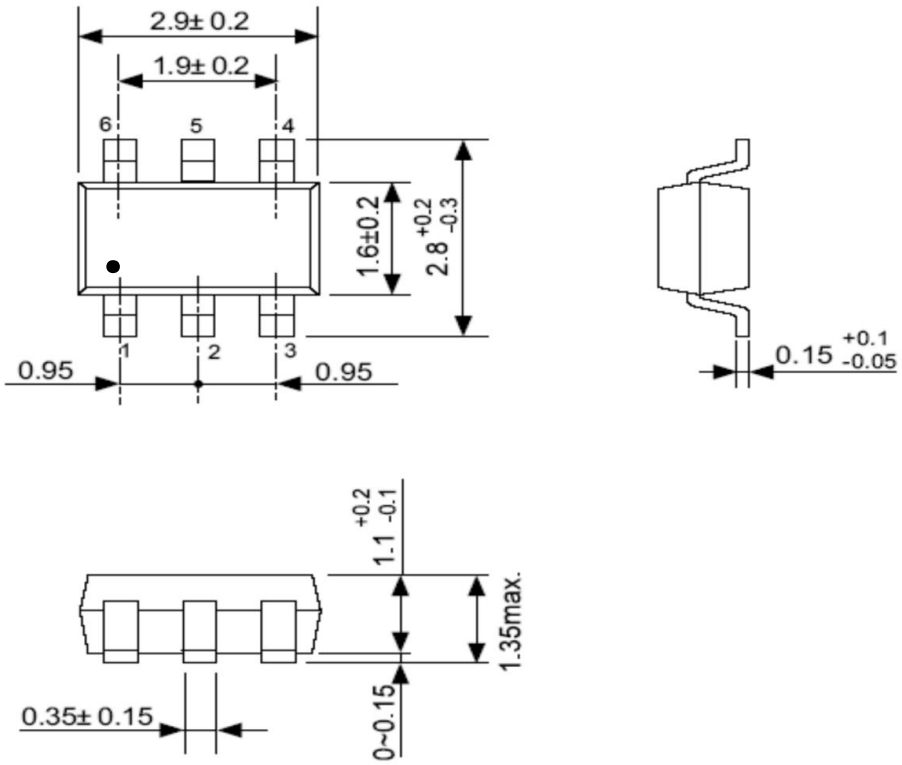


Fig 12. Gate Charge Waveform

PACKAGE DESCRIPTION

SOT23-6



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