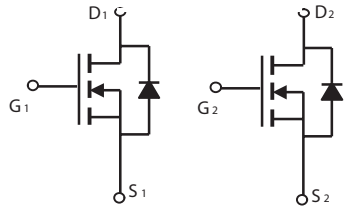
8205A

PRODUCT SUMMARY

V_{DSS} = 20V

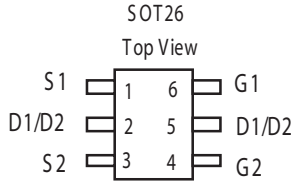
I_D = 4A

$R_{DS(ON)}$ =21 mΩ @ V_{GS}=4.0V (Typ)



FEATURES

- Super high dense cell design for low $R_{DS(ON)}$.
- Rugged and reliable.
- Surface Mount Package.



ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±10	V
Drain Current-Continuous[a] @ T_J=25°C	I_D	4	A
-Pulsed[b]	I_{DM}	25	A
Drain-Source Diode Forward Current[a]	I_S	1.25	A
Maximum Power Dissipation[a]	P_D	1.25	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

THERMAL CHARACTERISTICS

Thermal Resistance, Junction-to-Ambient[a]	$R_{\theta JA}$	100	°C/W

ELECTRICAL CHARACTERISTICS (T_A=25 °C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ [c]	Max	Unit
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250uA	20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}= 19.5V $_{GS}$=0V			1	uA
Gate-Body Leakage	I_{GSS}	V_{GS} =±10V,V_{DS}=0V			± 0.1	uA
ON CHARACTERISTICS [b]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D = 250uA	0.45		1.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.0V, I_D= 4.5A		21	25	m ohm
		V_{GS}=2.5V, I_D= 3.5A			37.5	m ohm
Forward Transconductance	g_{FS}	V_{DS} = 5.0V, I_D= 4A		10		S
DYNAMIC CHARACTERISTICS [c]						
Input Capacitance	C_{ISS}	V_{DS} =8V, V_{GS} = 0V f =1.0MHz		608		pF
Output Capacitance	C_{OSS}			115		pF
Reverse Transfer Capacitance	C_{RSS}			86		pF
SWITCHING CHARACTERISTICS [c]						
Turn-On Delay Time	$t_{D(ON)}$	V_{DD} = 10V, I_D = 1A, V_{GEN} = 4.5V, R_L = 10 ohm R_{GEN} = 10 ohm		10		ns
Rise Time	t_r			14		ns
Turn-Off Delay Time	$t_{D(OFF)}$			39		ns
Fall Time	t_f			20		ns
Total Gate Charge	Q_g	V_{DS} =10V, I_D=4A,VGS=4.5V		11		nC
		V_{DS} =10V, I_D =5A,V_{GS} =2.5V				nC
Gate-Source Charge	Q_{gs}	V_{DS} =10V, I_D = 5 A V_{GS} =4.5V		2.3		nC
Gate-Drain Charge	Q_{gd}			2.5		nC

ELECTRICAL CHARACTERISTICS (T_A=25°C unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ[c]	Max	Unit
DRAIN-SOURCE DIODE CHARACTERISTICS [b]						
Diode Forward Voltage	V_{SD}	V_{GS}=0V,IS=1.7A			1.2	V

Notes

a.Reflow soldering internal actual temperature < 250 degrees, time in high temperature < 7 s.
b.Pulse Test:Pulse Width≤ 300us, Duty Cycle≤ 2%.
c.Guaranteed by design, not subject to production testing.

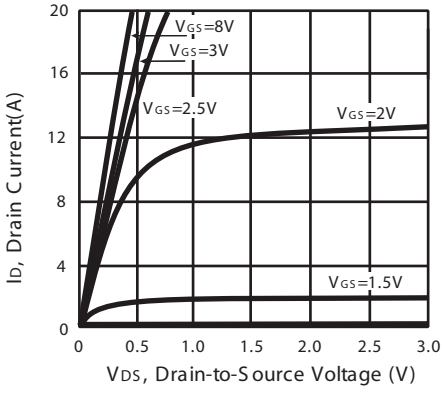


Figure 1. Output Characteristics

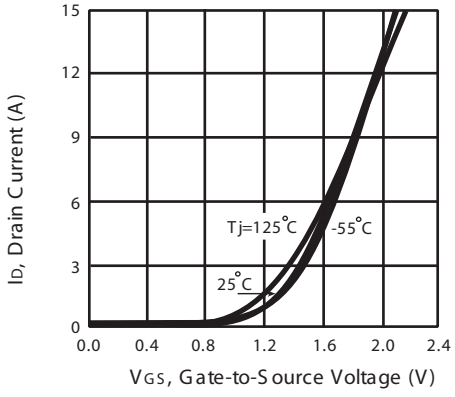


Figure 2. Transfer Characteristics

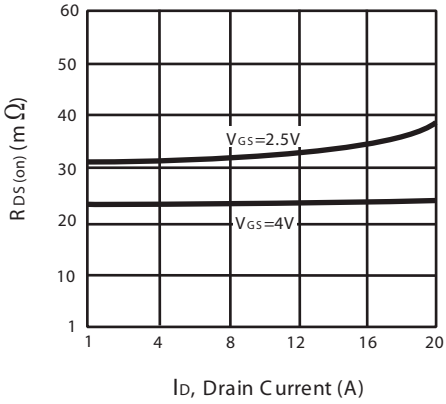


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

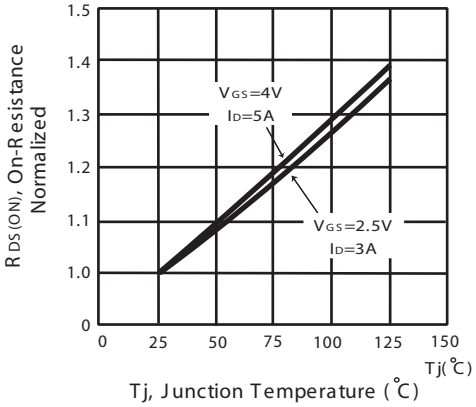


Figure 4. On-Resistance Variation with Drain Current and Temperature

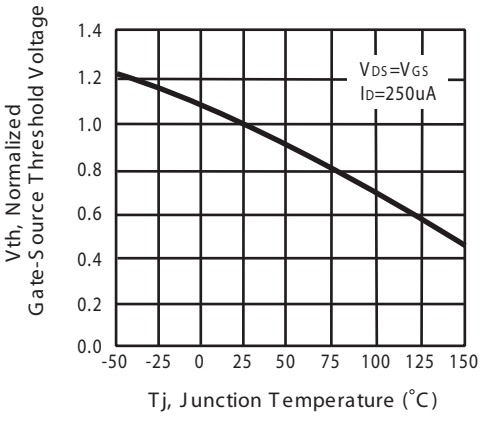


Figure 5. Gate Threshold Variation with Temperature

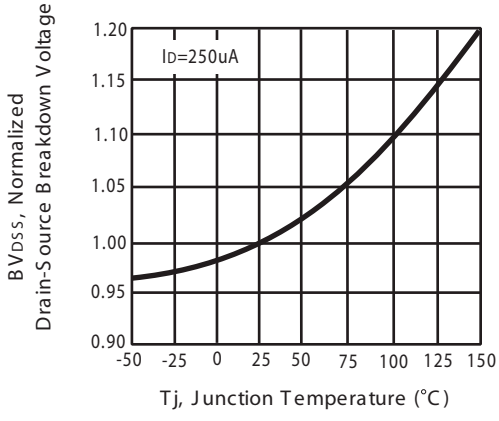


Figure 6. Breakdown Voltage Variation with Temperature

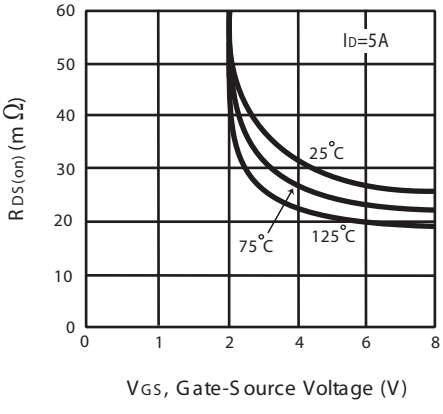


Figure 7. On-Resistance vs. Gate-Source Voltage

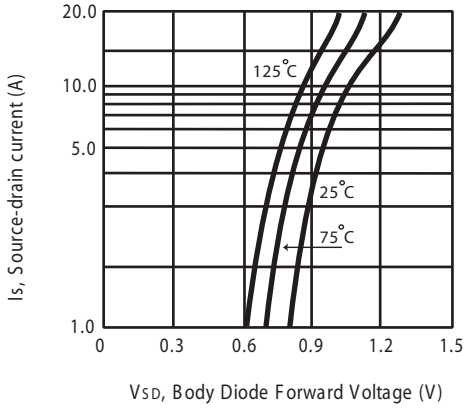


Figure 8. Body Diode Forward Voltage Variation with Source Current

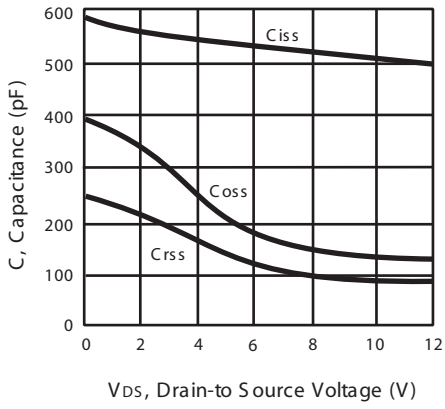


Figure 9. Capacitance

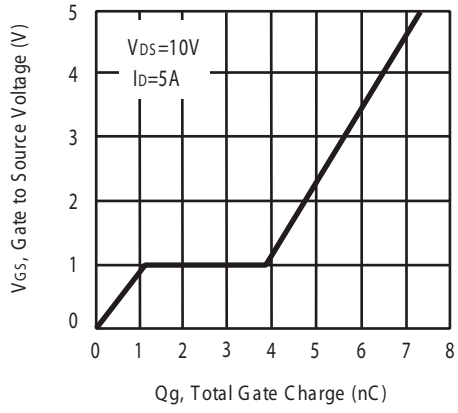
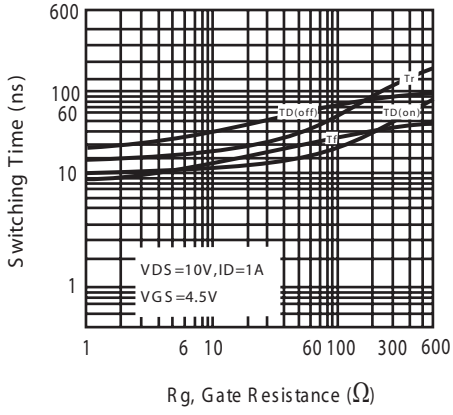


Figure 10. Gate Charge



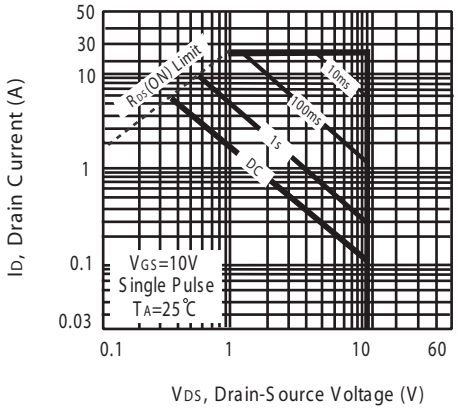


Figure 11.switching characteristics

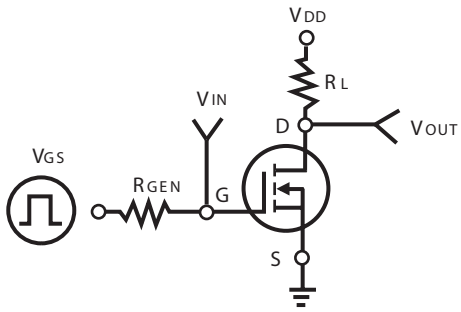


Figure 11. Switching Test Circuit

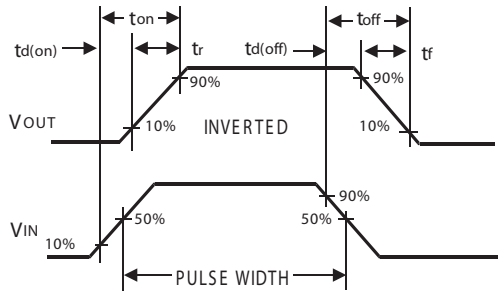


Figure 12. Switching Waveforms