Dual N-Channel Enhancement Mode Power MOSFET **MX8205AH**

DESCRIPTION

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

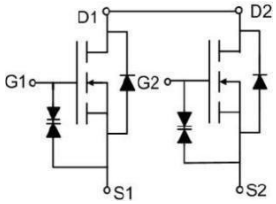
GENERAL FEATURES

- V_{DS}=20V, I_D=6A
  $R_{DS(ON)}$(Typ.)=27mΩ @ V_{GS}=2.5V
  $R_{DS(ON)}$(Typ.)=22mΩ @ V_{GS}=4.5V
- Improved dv/dt capability
- Fast switching
- Green Device Available

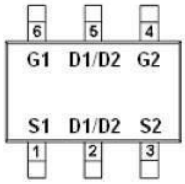
APPLICATION

- MB/VGA/Voore
- Portable Equipment
- Battery Powered System
- Load Switch
- LCD Display inverter

PINOUT



Schematic diagram



Pin Assignment


SOT23-6 top view

ORDERING INFORMATION

Part Number	StorageTemperature	Package	Devices Per Reel
MX8205AH	-55°C to 150°C	SOT23-6	-

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}	±12	V
Drain Current-Continuous(T_C=25°C)	I_D	6	A
Drain Current-Continuous(T_C=70°C)	I_D	4.8	A
Pulsed Drain Current	I_{DM}	20	A
Maximum Power Dissipation(T_A=25°C)	P_D	1.07	W
Maximum Power Dissipation(T_A=70°C)	P_D	0.68	W
Continuous Source Current(Diode Conduction)	I_S	1.6	A
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE

Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	117	°C/W

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

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250μA	20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=16V, V_{GS}=0V	-	-	1	μA
		V_{DS}=16V,V_{GS}=0V,T_J=85°C	-	-	10	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V, V_{DS}=0V	-	-	±30	μA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=250μA	0.5	-	1.2	V
Drain-Source On-State Resistance(Note1)	$R_{DS(ON)}$	V_{GS}=2.5V, I_D=3.2A	-	27	37	mΩ
		V_{GS}=4.5V, I_D=6A	-	22	25	mΩ
Forward Trans Conductance	g_{fs}	V_{DS}=5V, I_D=3.6A	-	10	-	S
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=10V, V_{GS}=0V, F=1.0MHz	-	850	-	pF
Output Capacitance	C_{oss}		-	120	-	pF
Reverse Transfer Capacitance	C_{rss}		-	60	-	pF
Turn-on Delay Time	$t_{d(on)}$	V_{DS}=10V, V_{GS}=4.5V, R_G=1Ω, I_D=5A	-	10	16	nS
Turn-on Rise Time	t_r		-	16	25	nS
Turn-Off Delay Time	$t_{d(off)}$		-	31	45	nS
Turn-Off Fall Time	t_f		-	10	16	nS
Total Gate Charge	Q_g	V_{DS}=10V, I_D=1A, V_{GS}=4.5V	-	8.2	-	nC
Gate-Source Charge	Q_{gs}		-	1.2	-	nC
Gate-Drain Charge	Q_{gd}		-	1	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_S=1.6A	-	0.85	1.2	V

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 1. Output Characteristics

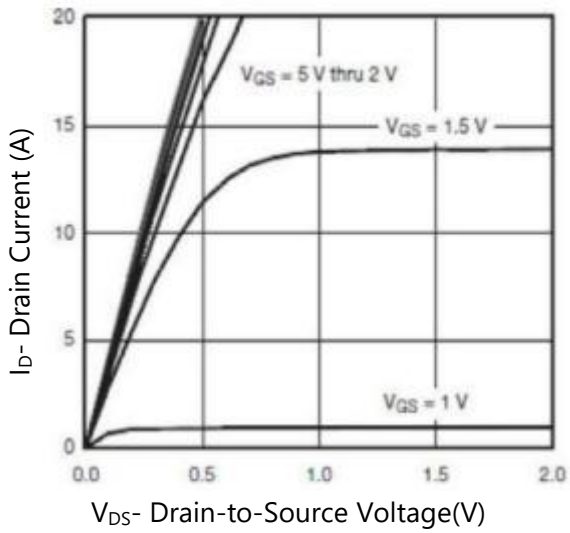


Figure 2. Transfer Characteristics

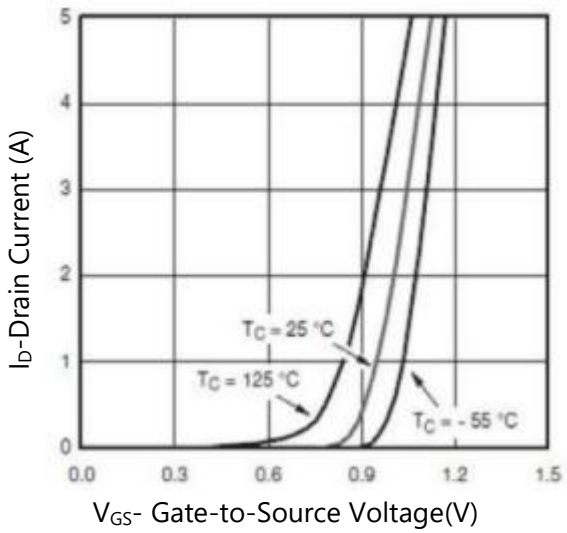


Figure 3. On-Resistance vs. Drain Current

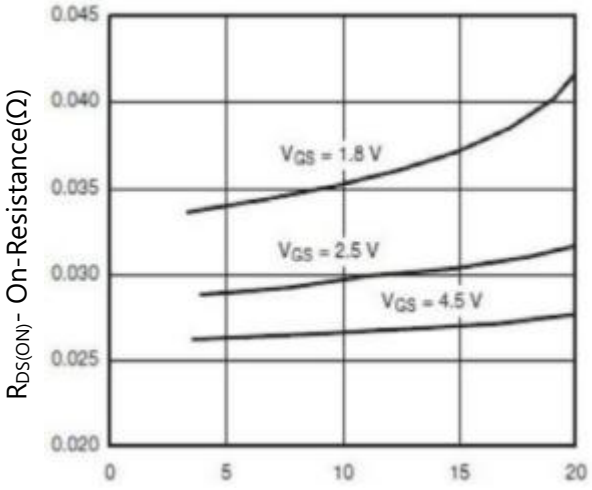


Figure 4. Capacitance

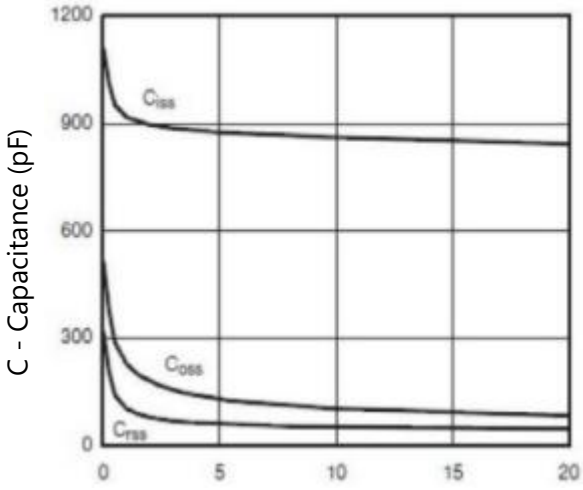


Figure 5. On-Resistance vs. Drain Current

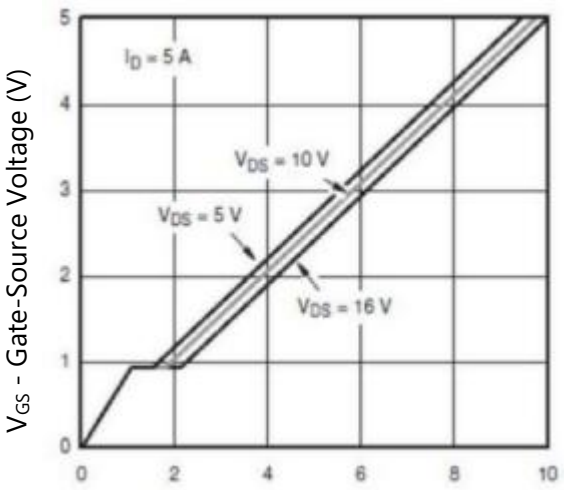
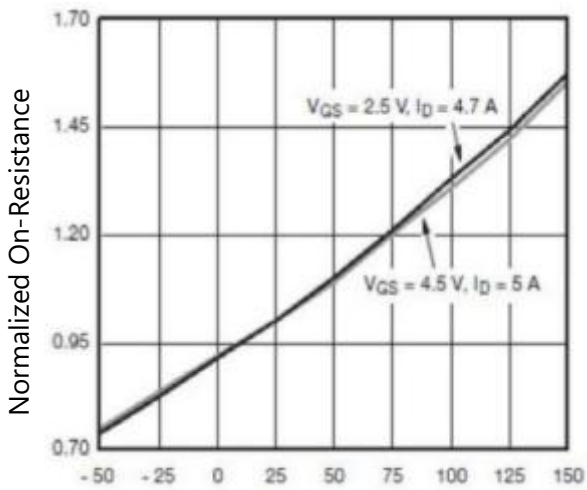


Figure 6. $R_{DS(ON)}$ vs. Junction Temperature



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

Figure 7. Source-Drain Diode Forward Voltage

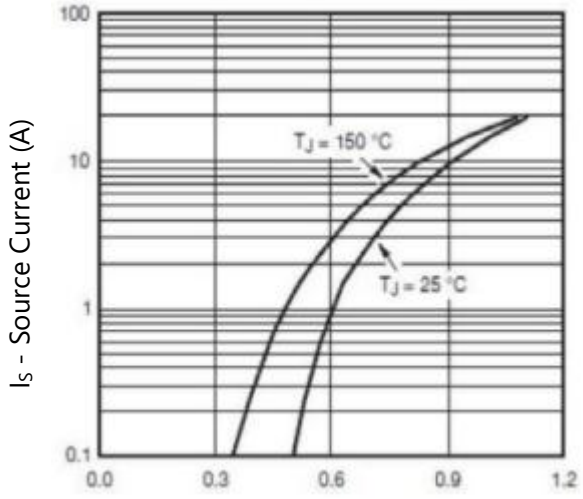


Figure 8. On Resistance vs. Gate-to-Source Voltage

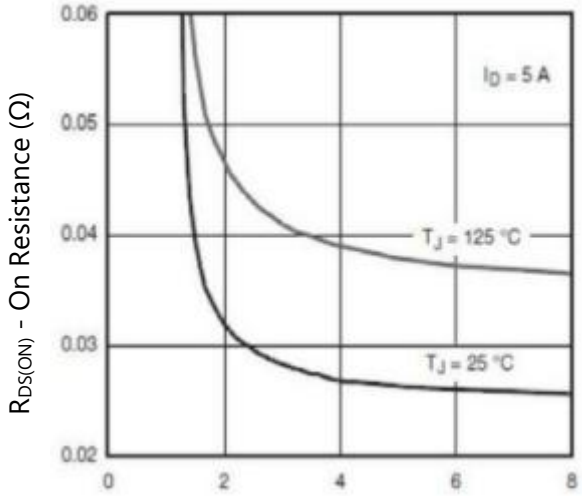


Figure 9. Threshold Voltage

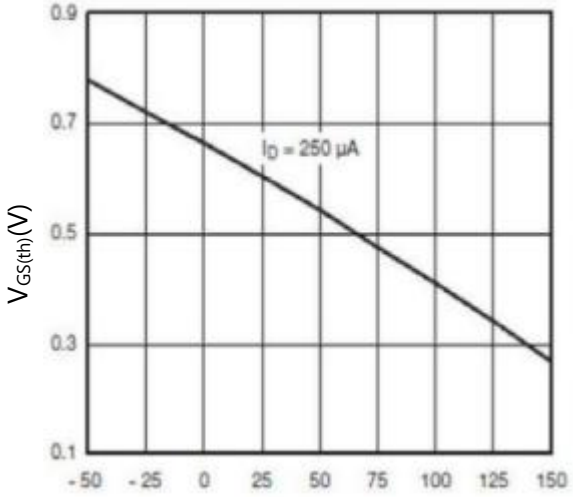


Figure 10. Single Pulse Power(Junction-to-Ambient)

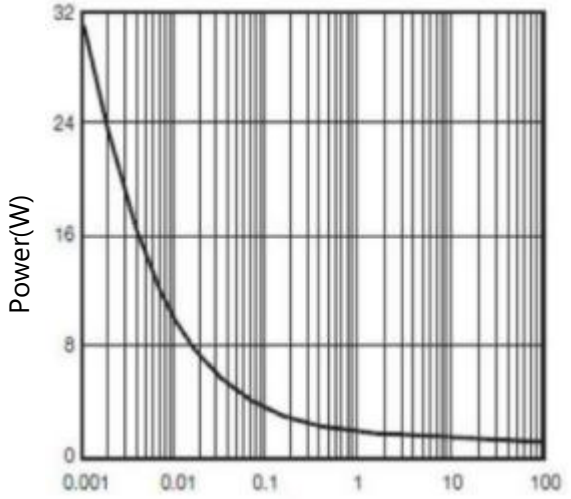
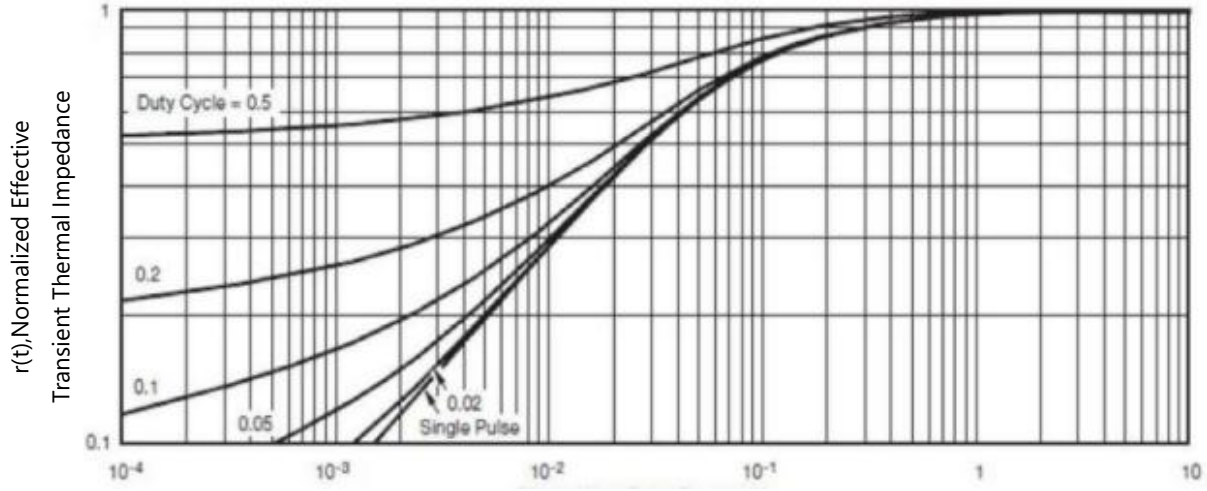
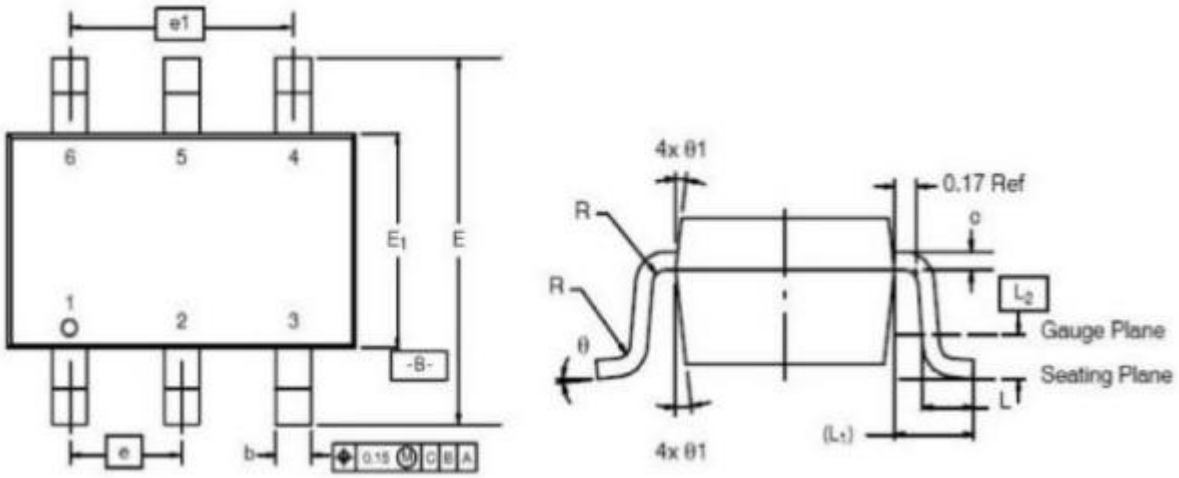


Figure 11. Normalized Thermal Transient Impedance



PACKAGE INFORMATION

SOT23-6



Symbol	Dimensions In Millimeters			Dimensions In Inches		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.91	-	1.10	0.036	-	0.043
A1	0.01	-	0.10	0.0004	-	0.004
A2	0.90	0.97	1.00	0.035	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E1	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
e1	1.90	2.00	2.10	0.075	0.080	0.085
L	0.35	-	0.50	0.014	-	0.020
L1	0.60 REF			0.024 REF		
L2	0.25 BSC			0.010 BSC		
R	0.10	-	-	0.004	-	-
θ	0°	4°	8°	0°	4°	8°
θ1	-	7°	-	-	7°	-