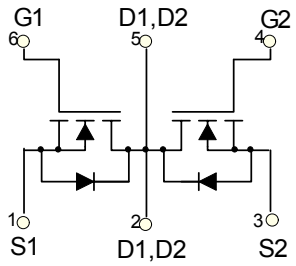
EFM8205

Dual N-Channel Advanced MOSFET

• Product Summary

Part #	V_{DS}	$R_{DS(on).typ}$ ($@V_{GS}$=4.5V)	$R_{DS(on).typ}$ ($@V_{GS}$=2.5V)	I_D
EFM8205	20V	20mΩ	26mΩ	6A



N-Channel MOSFET

• Description

- The EFM8205 is the high cell density trenched
- N-ch MOSFETs which provide excellent
- RDSON and gate cherge for most of the
- synchronous buck converter applications.
- The EFM8205 meet the RoHS and Green
- Prod uct requirement, 100 % EAS guaranteed
- with full function reliability approved.

SOT-23-6L

•Application

- Super Low Gate Charge 100% EAS Guaranteed
- Green Device Available Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

•Ordering Information:

Part NO.	EFM8205
Marking	8205A
Packing Information	REEL TAPE
Basic ordering unit (pcs)	3000

•Absolute Maximum Ratings (T_C=25℃)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±12	V
Drain Current-Continuous	I_D	6	A
Drain Current-Pulsed (Note 1)	I_{DM}	20	A
Maximum Power Dissipation	P_D	1.2	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

•Thermal Characteristic

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	100	℃/W

● Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated)

Parameter	Symbol	Condition	Min	Typ	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}=20V V_{GS}=0V	--	--	1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±12V V_{DS}=0V	--	--	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=250uA	0.5	0.7	1.2	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=4.5V I_D=6A	--	20	27	mΩ
		V_{GS}=2.5V I_D=5A	--	26	32	mΩ
Forward Transconductance	g_{FS}	V_{DS}=5V I_D=6A	--	17.7	--	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=10V V_{GS}=0V F=1.0MHz	--	802	--	PF
Output Capacitance	C_{oss}		--	153	--	PF
Reverse Transfer Capacitance	C_{rss}		--	122	--	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=10V I_D=1A V_{GS}=4.5V R_G=10Ω,	--	18	--	nS
Turn-on Rise Time	t_r		--	5	--	nS
Turn-Off Delay Time	$t_{d(off)}$		--	43.8	--	nS
Turn-Off Fall Time	t_f		--	20	--	nS
Total Gate Charge	Q_g	V_{DS}=10V I_D=4A V_{GS}=4.5V	--	10.5	--	nC
Gate-Source Charge	Q_{gs}		--	2	--	nC
Gate-Drain Charge	Q_{gd}		--	2.5	--	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V I_S=1.7A	--	0.75	1.2	V
Diode Forward Current (Note 2)	I_S		--	--	1.7	A

Notes:

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

• Typical Characteristics

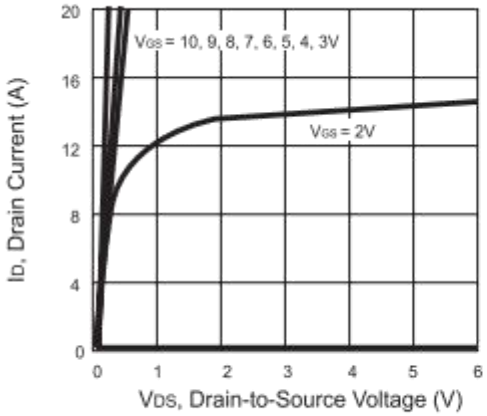


Figure 1. Output Characteristics

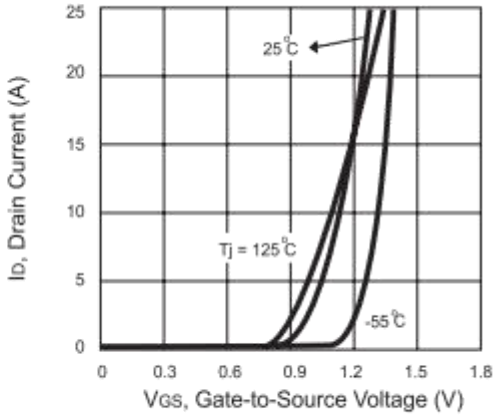


Figure 2. Thansfer Characteristics

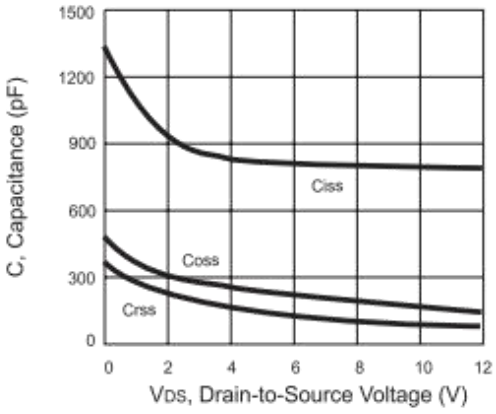


Figure 3. Capacitance

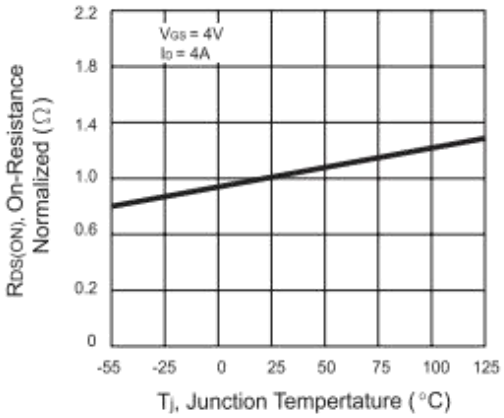


Figure 4. On-Resistance Variation with Temperature

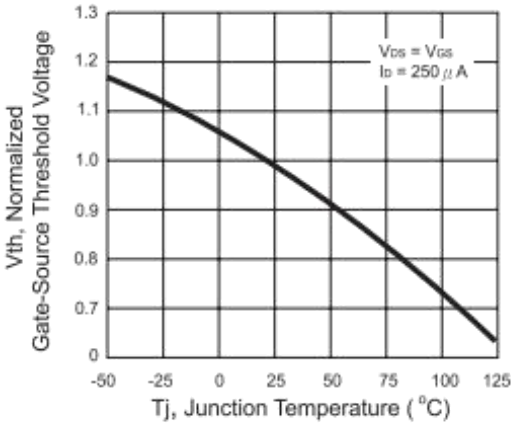


Figure 5. Gate Threshold Variation with Temperature

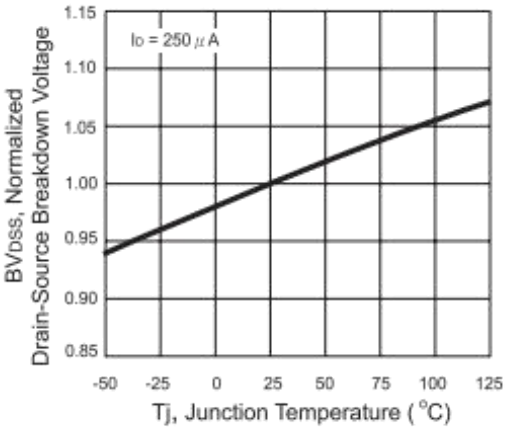


Figure 6. Breakdown Voltage Variation with Temperature

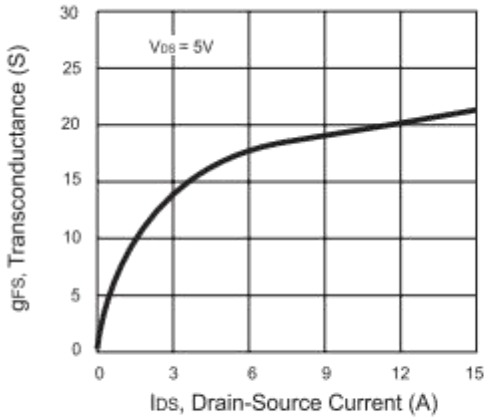


Figure 7. Transconductance Variation with Drain Current

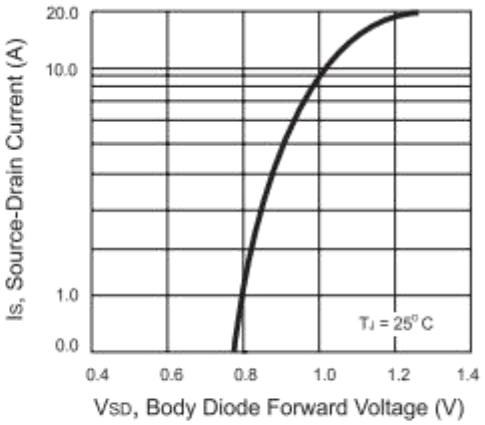


Figure 8. Body Diode Forward Voltage Variation with Source Current

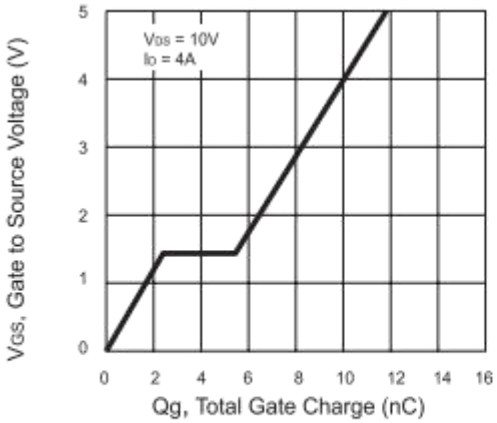


Figure 9. Gate Charge

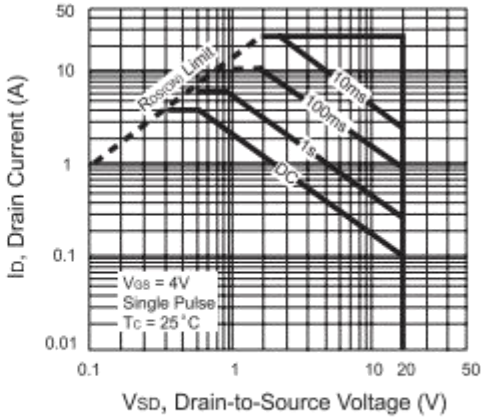


Figure 10. Maximum Safe Operating Area

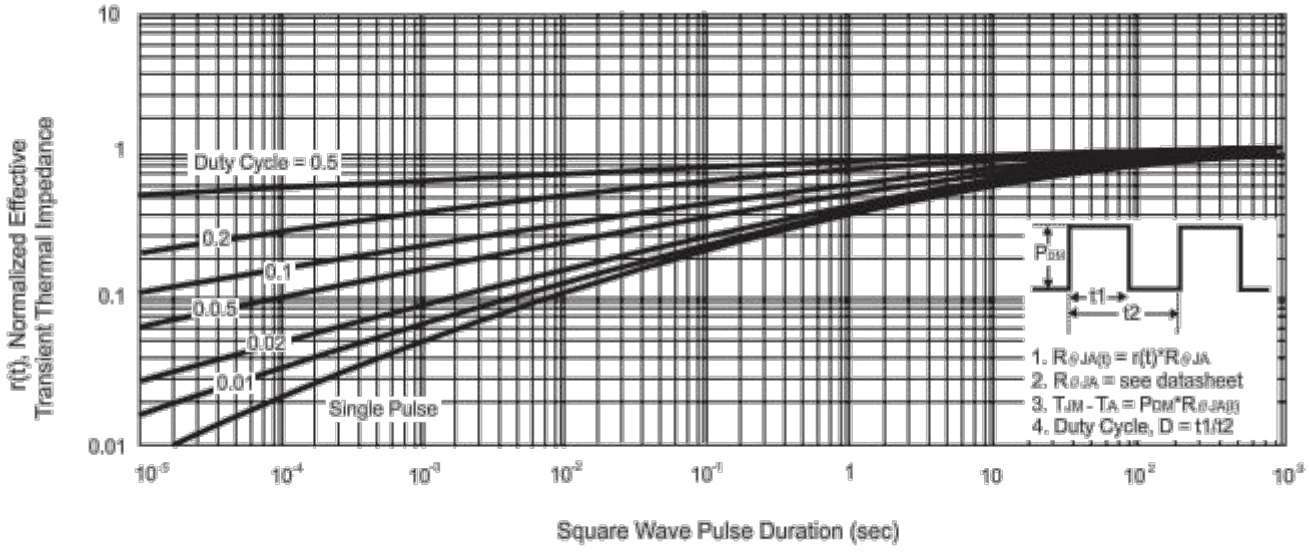


Figure ■. Normalized Thermal Transient Impedance Curve

• Test circuit

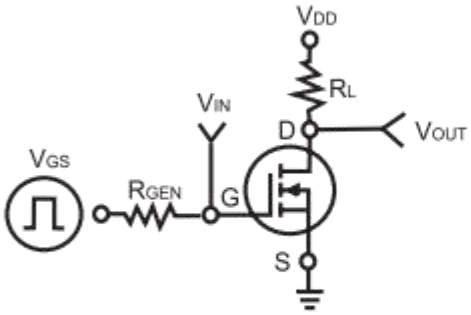


Figure 11. Switching Test Circuit

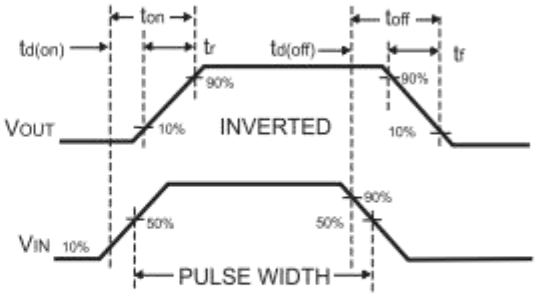
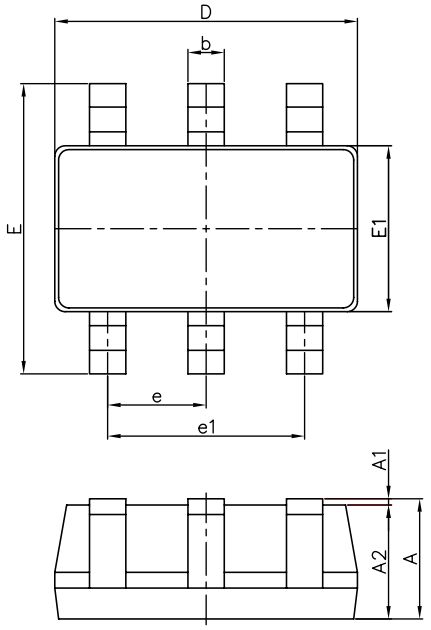
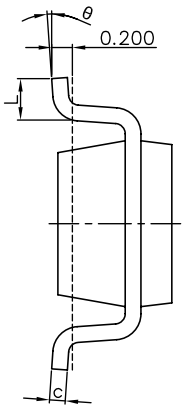


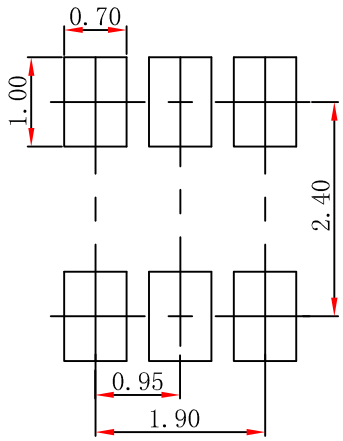
Figure 12. Switching Waveforms

SOT-23-6L Package Outline Dimensions





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
E1	1.500	1.700	0.059	0.067
E	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°



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.