



ER4409A

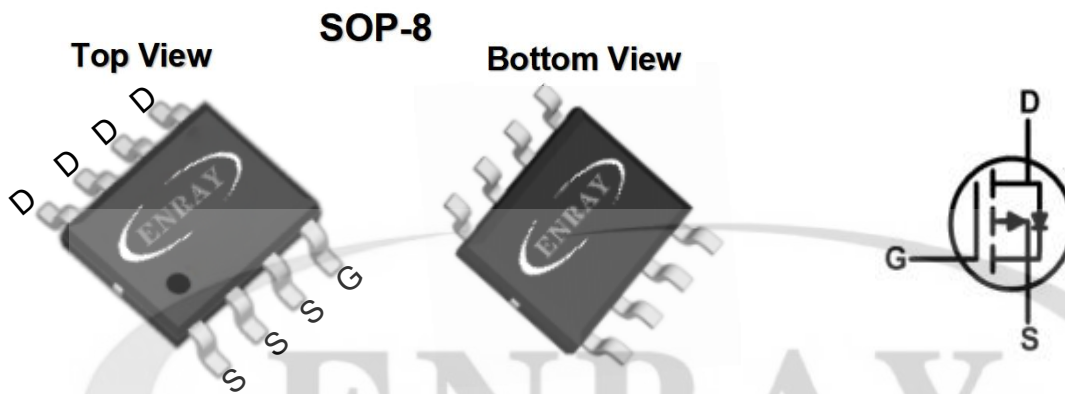
-30V P-Channel MOSFET

Features

The ER4409A is the high cell density trench N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications. The DS4409A meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

V _{DS}	-30V
I _D	-18A
R _{DS(ON)} (at V _{GS} =-10V)	<9.2mΩ
R _{DS(ON)} (at V _{GS} =-4.5V)	< 14mΩ



Maximum Ratings(Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current	I _{D@TA=25°C}	-18	A
Continuous Drain Current	I _{D@TA =100°C}	-8.8	
Pulsed Drain Current ²	I _{DM}	-53	
Single Pulse Avalanche Energy ²	EAS	80	mJ
Total Power Dissipation	PD@TC=25°C	3	W
Storage Temperature Range	TSTG	-55 to 150	°C
Operating Junction Temperature Range	TJ	-55 to 150	
Thermal Data			
Parameter	Symbol	Max.	Unit
Thermal Resistance Junction-ambient	RθJA	41.6	°C/W

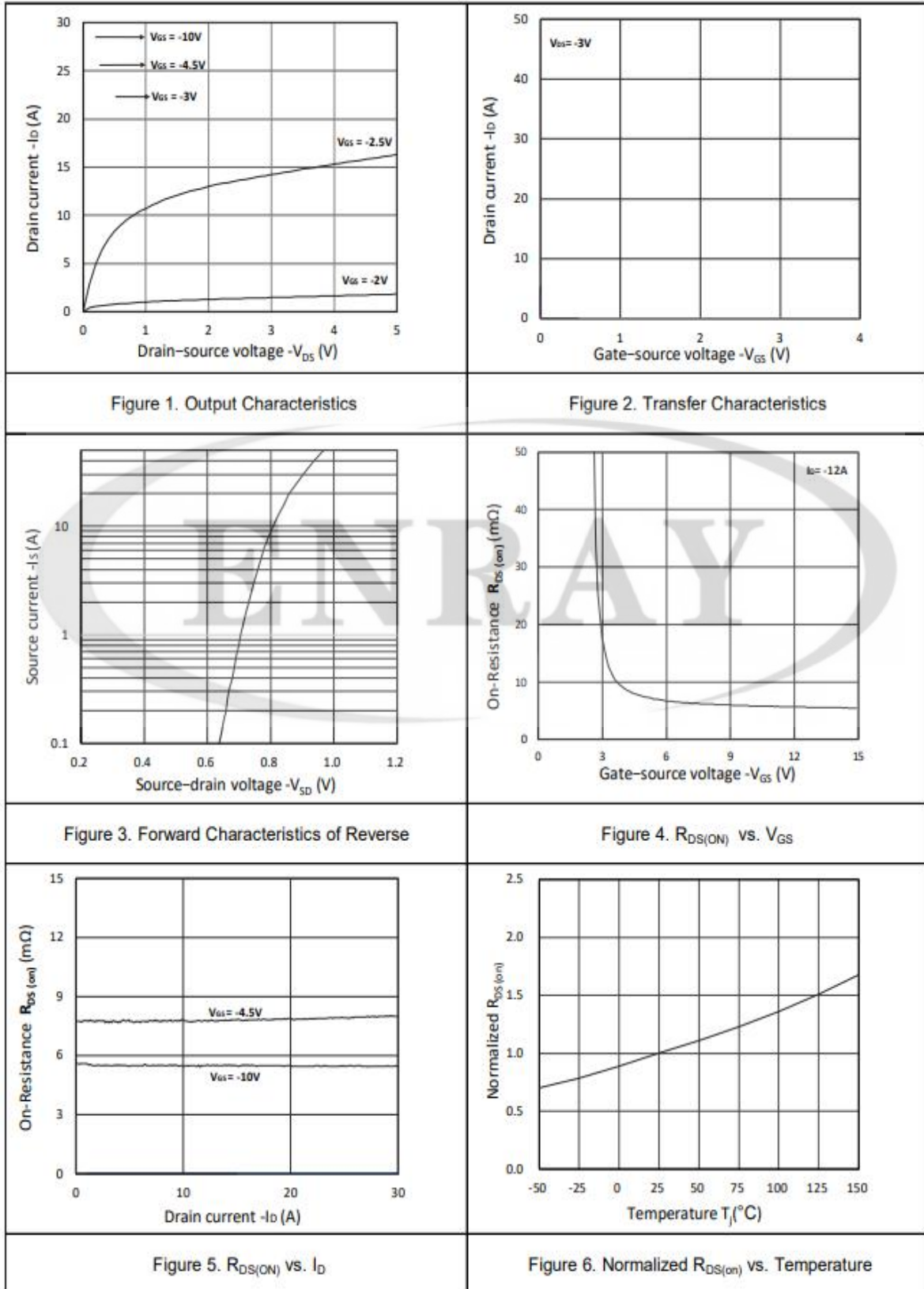
Electrical Characteristics(T_J=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters ③						
Drain-Source Breakdown Voltage	BVDSS	VGS = 0V, ID = -250μA	-30			V
Gate Threshold Voltage	VGS(th)	VDS = VGS, ID = -250μA	-1.0		-2.5	V
Gate-Body leakage Current	IGSS	VDS = 0V, VGS = ±20V			±100	nA
Zero Gate Voltage Drain Current	IDSS	VDS = -30V, VGS = 0V			-1	μA
Static Drain-Source On-Resistance	RDS(on)	VGS = -10V, ID = -12A		5.8	9.2	mΩ
		VGS = -4.5V, ID = -10A		8	14	mΩ
Dynamic Parameters ④						
Input Capacitance	Ciss	VDS=-15V, VGS=0V, f=1MHz		3100		pF
Output Capacitance	Coss			430		pF
Reverse Transfer Capacitance	Crss			358		pF
Total Gate Charge	Qg	VGS = -10V, VDS = -15V ID= -12A		35		nC
Gate Source Charge	Qgs			9.9		nC
Gate Drain Charge	Qgd			10.5		nC
Switching Parameters ④						
Turn-On DelayTime	td(on)	VGS = -10V, VDD = -15V RG = 3Ω, ID= -12A		10.8		ns
Turn-On Rise Time	tr			13.2		ns
Turn-Off DelayTime	td(off)			73		ns
Turn-Off Fall Time	tf			35		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current ^{1,4}	IS				-14	A
Diode Forward Voltage ²	VSD	IS = -1A, VGS = 0V			-1.2	V

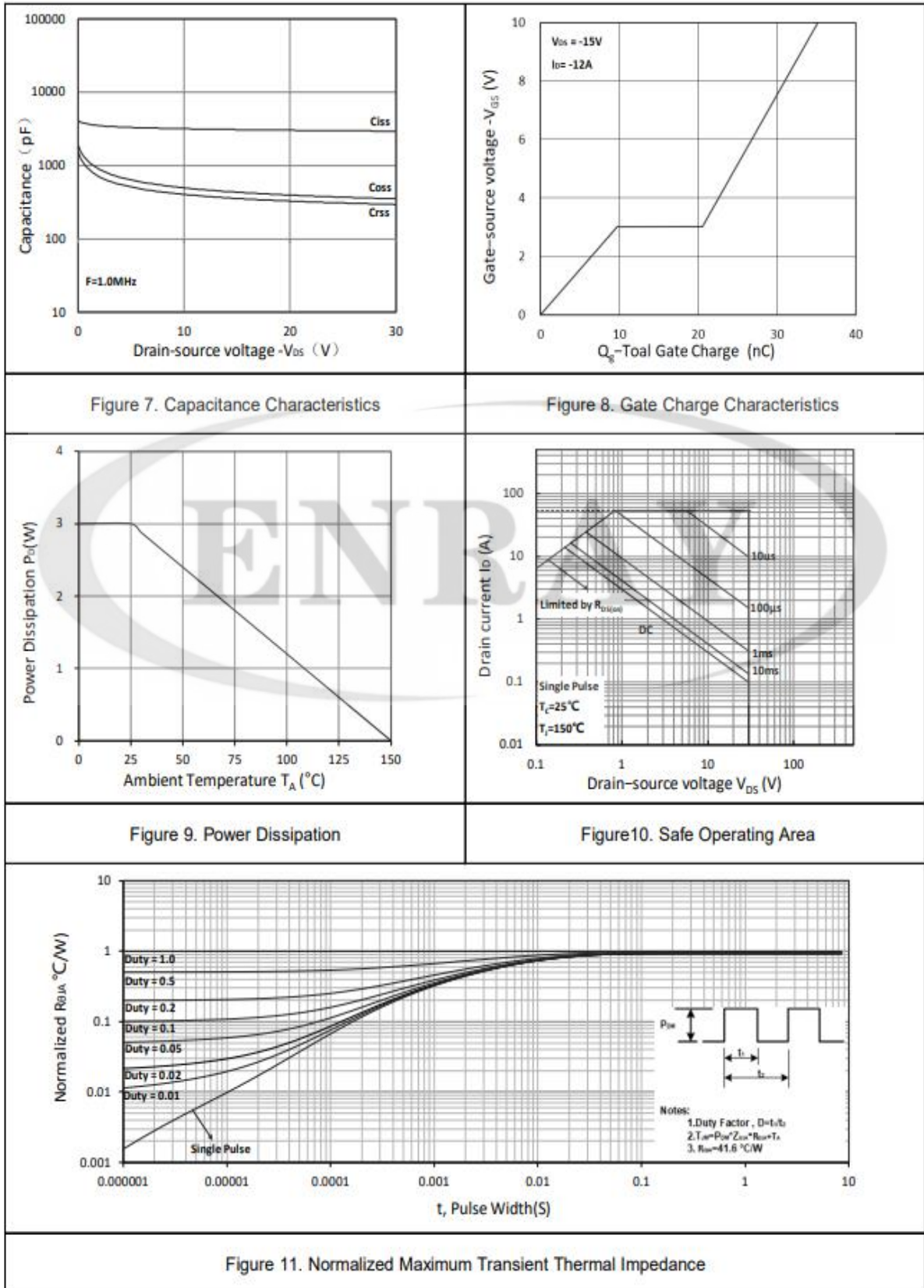
Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

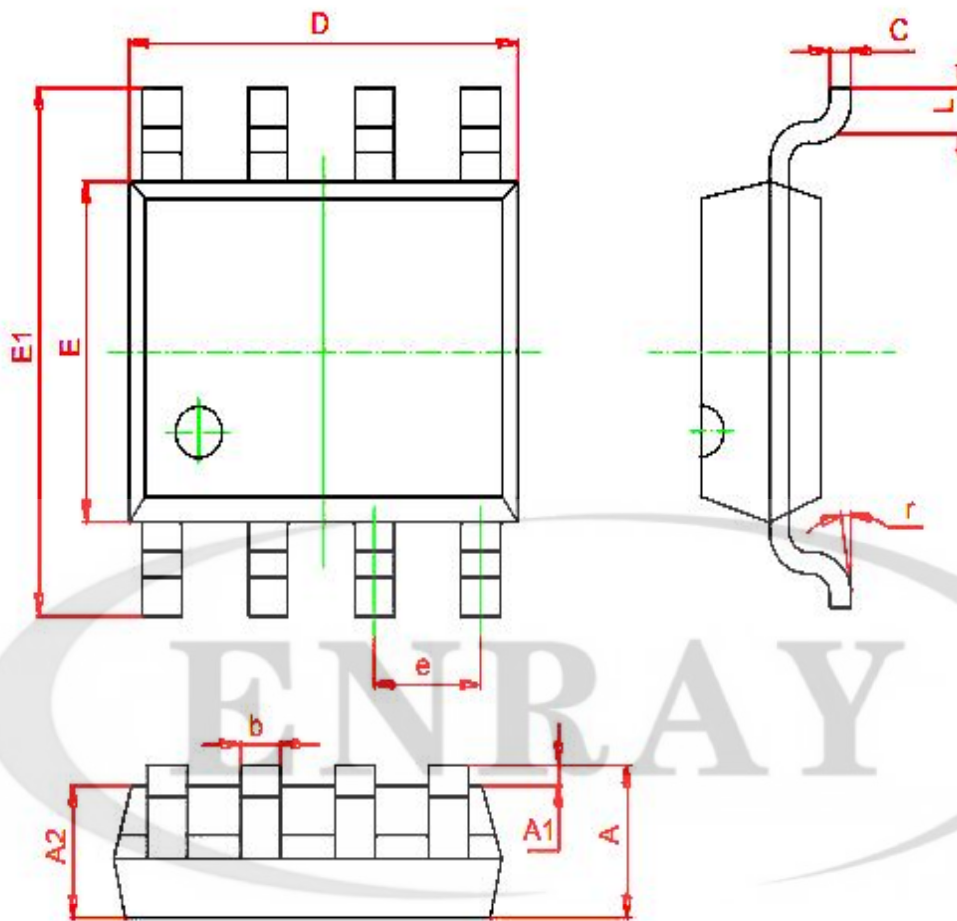
Typical Electrical and Thermal Characteristics



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SOP-8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
C	0.170	0.250	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050 (BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°