

Product Summary

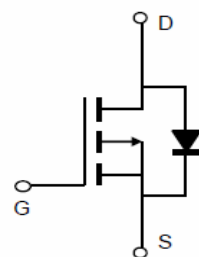
Part #	V_{DS}	$R_{DS(on).typ}$ (@ $V_{GS}=10V$)	$R_{DS(on).typ}$ (@ $V_{GS}=4.5V$)	I_D
EFM700P06D	-60V	70m Ω	85m Ω	-15A

Description

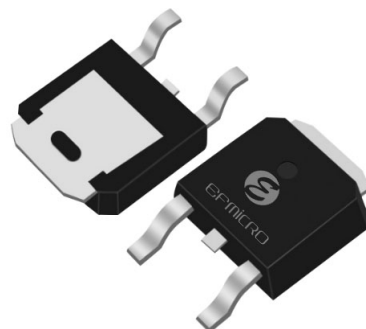
- The EFM700P06D is the high cell density trench
- P-ch MOSFETs which provide excellent
- RDSON and gate charge for most of the
- synchronous buck converter applications.
- The EFM700P06D meet the RoHS and Green
- Product requirement, 100 % EAS guaranteed
- with full function reliability approved.

Application

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



PChannel MOSFET



TO-252-2L

Ordering Information:

Part NO.	EFM700P06D
Marking	700P06D ****
Packing Information	REEL TAPE
Basic ordering unit (pcs)	2500

Absolute Maximum Ratings ($T_C=25^{\circ}C$)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous	I_D	-15	A
Drain Current-Pulsed ^(Note 1)	I_{DM}	-26	A
Maximum Power Dissipation	P_D	31.3	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 To 150	$^{\circ}C$

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient ^(Note 2)	$R_{\theta JA}$	62	$^{\circ}C/W$
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• 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	-60	--	--	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-48V V _{GS} =0V	--	--	-1	nA
Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V V _{DS} =0V	--	--	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =250uA	-1.0	--	-2.5	V
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-10V I _D =-10A	--	70	90	mΩ
		V _{GS} =-4.5V I _D =-5A	--	85	115	mΩ
Forward Transconductance	g _{FS}	V _{DS} =-5V I _D =-4A	--	8.7	--	S
Gate Resistance	R _g	F=1.0MHz	--	15	--	Ω
Dynamic Characteristics (Note4)						
Input Capacitance	C _{Iss}	V _{DS} =-15V V _{GS} =0V F=1.0MHz	--	1080	--	PF
Output Capacitance	C _{Oss}		--	73	--	PF
Reverse Transfer Capacitance	C _{Rss}		--	50	--	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}	V _{DD} =-15V I _D =1A V _{GS} =-10V R _G =3.3Ω,	--	8.8	--	nS
Turn-on Rise Time	t _r		--	19.6	--	nS
Turn-Off Delay Time	t _{d(off)}		--	47.2	--	nS
Turn-Off Fall Time	t _f		--	9.6	--	nS
Total Gate Charge	Q _g	V _{DS} =-12V I _D =-6A V _{GS} =-4.5V	--	11.8	--	nC
Gate-Source Charge	Q _{gs}		--	1.9	--	nC
Gate-Drain Charge	Q _{gd}		--	6.5	--	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V I _S =-1A	--	--	-1	V
Diode Forward Current (Note 2)	I _S		--	--	-15	A

Note :

1. The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.

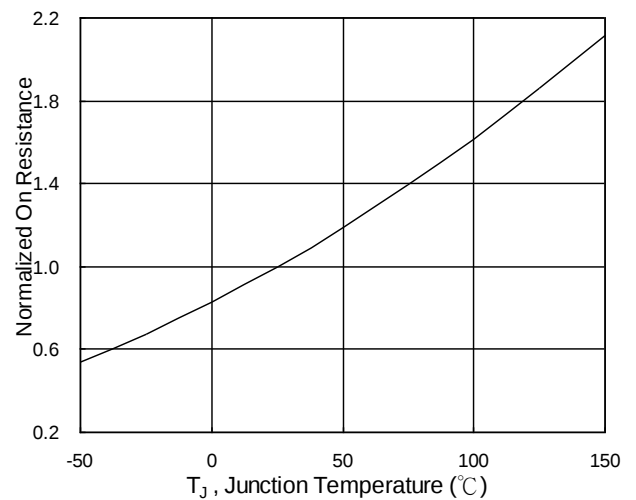
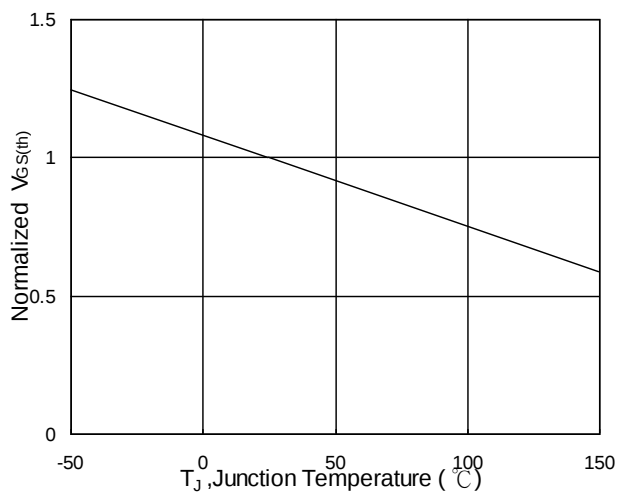
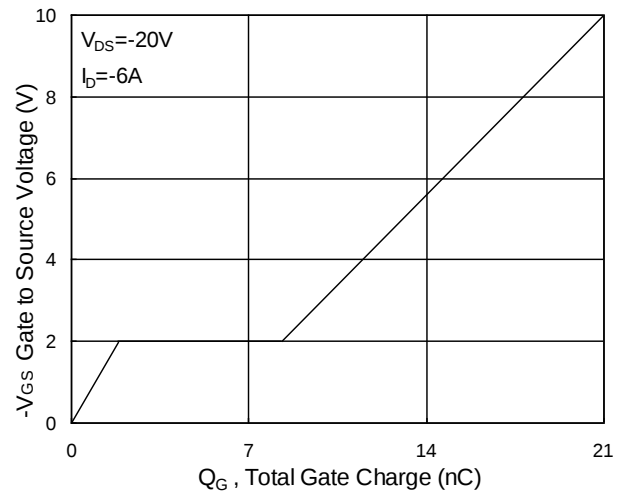
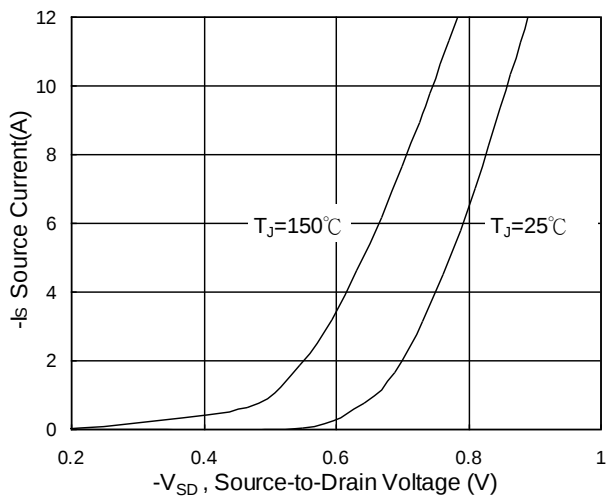
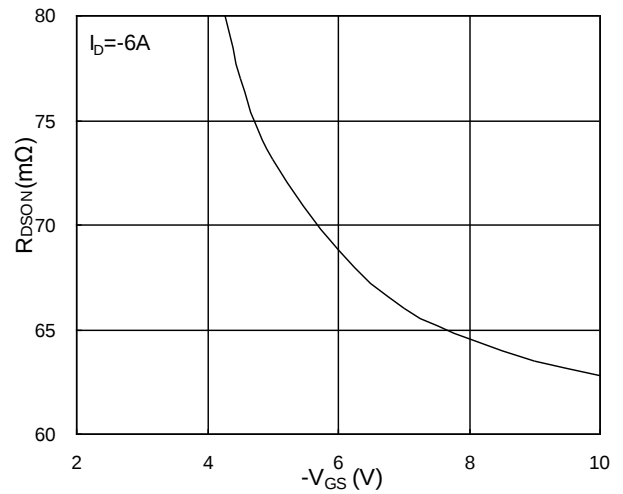
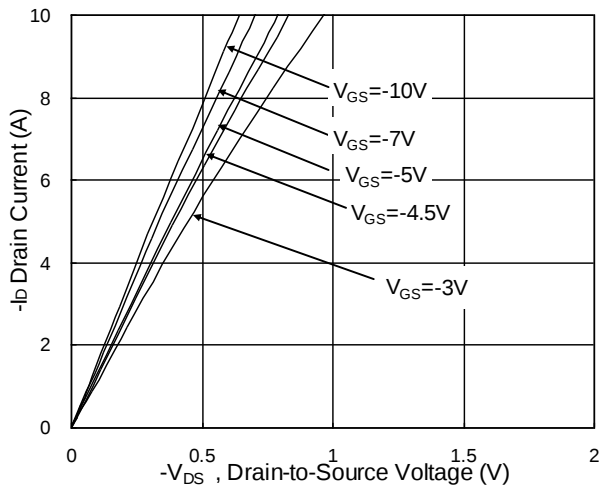
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%

3. The EAS data shows Max. rating . The test condition is V_{DD}=-25V, V_{GS}=-10V, L=0.1mH, I_{AS}=-24.4A

4. The power dissipation is limited by 150°C junction temperature

5. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

• Typical Characteristics



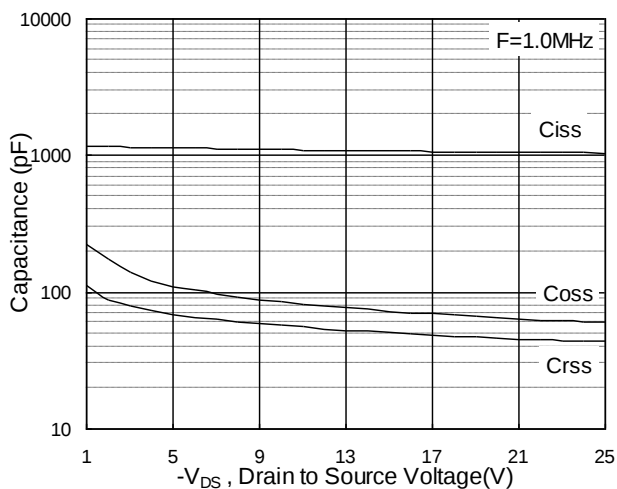


Fig.7 Capacitance

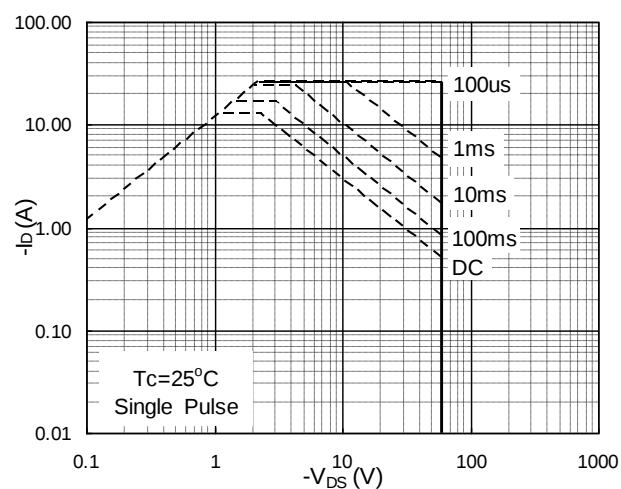


Fig.8 Safe Operating Area

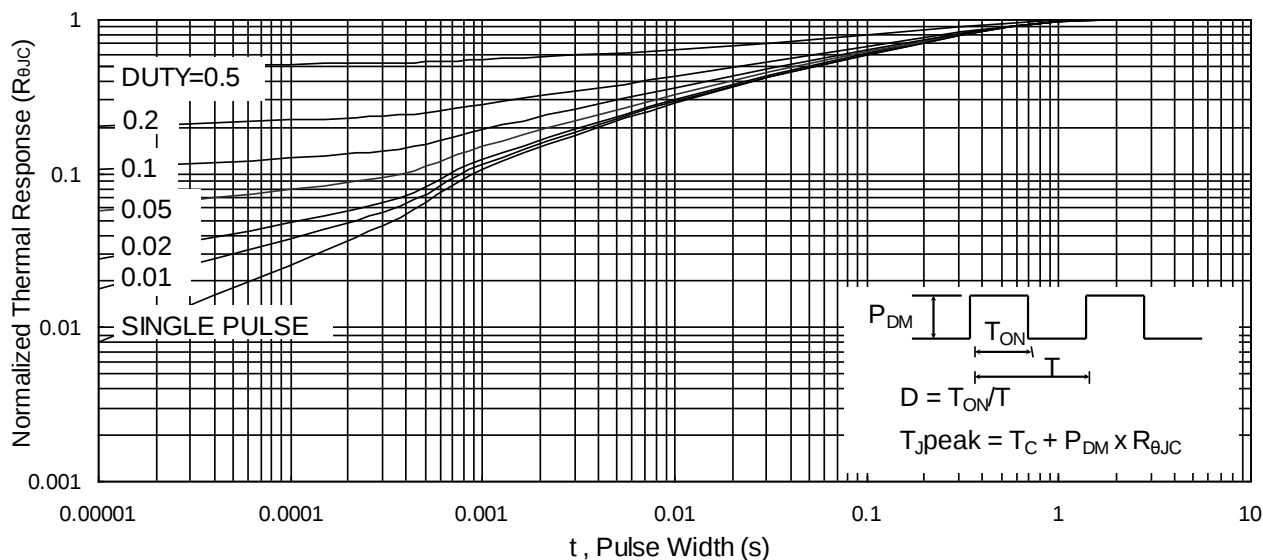


Fig.9 Normalized Maximum Transient Thermal Impedance

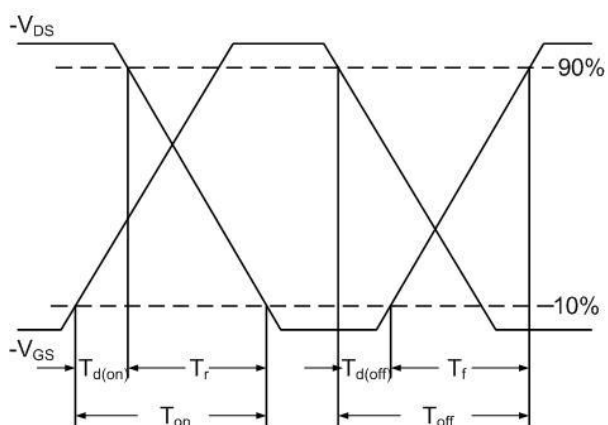


Fig.10 Switching Time Waveform

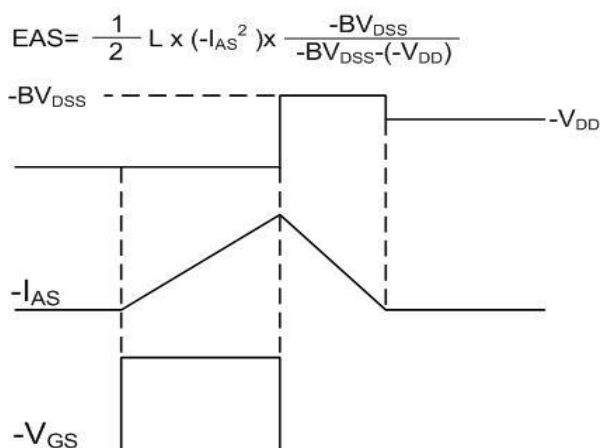
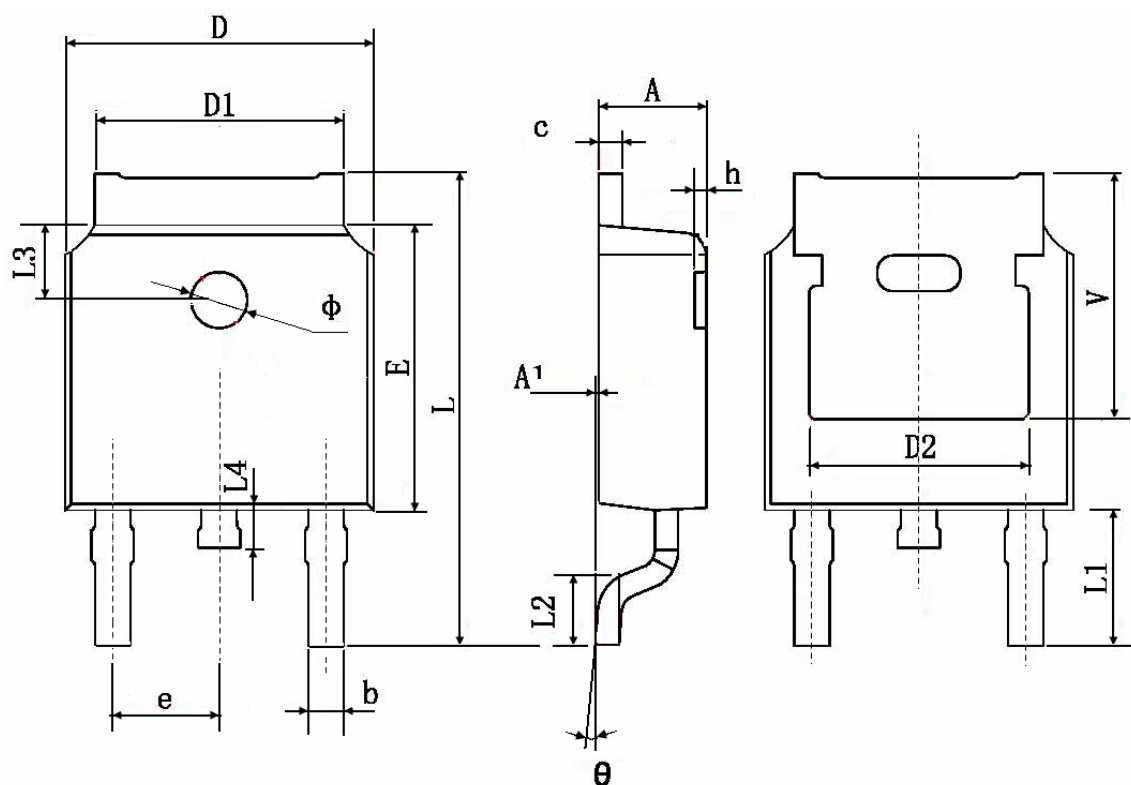


Fig.11 Unclamped Inductive Switching Waveform

TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.83 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	