

Features

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

Product Summary

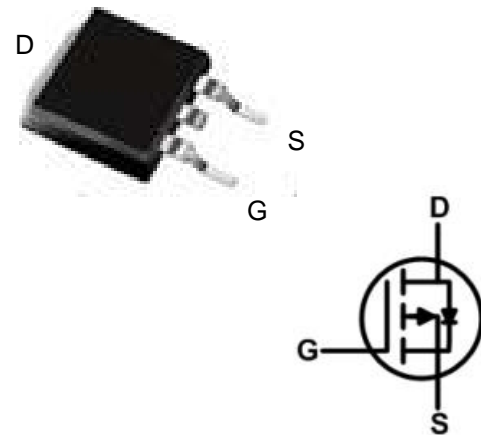
BVDSS	RDSON	ID
-60V	14mΩ	-60A

Description

The D60P06M is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The D60P06M meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

TO-252 Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current, V _{GS} @ -10V ₁	-60	A
I _D @T _C =100°C	Continuous Drain Current, V _{GS} @ -10V ₁	-35	A
I _{DM}	Pulsed Drain Current ₂	-170	A
EAS	Single Pulse Avalanche Energy ₃	330	mJ
I _{AS}	Avalanche Current	-40	A
P _D @T _C =25°C	Total Power Dissipation ₄	90	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-Ambient ₁	---	62	°C/W
R _{θJC}	Thermal Resistance Junction-Case ₁	---	1.4	°C/W

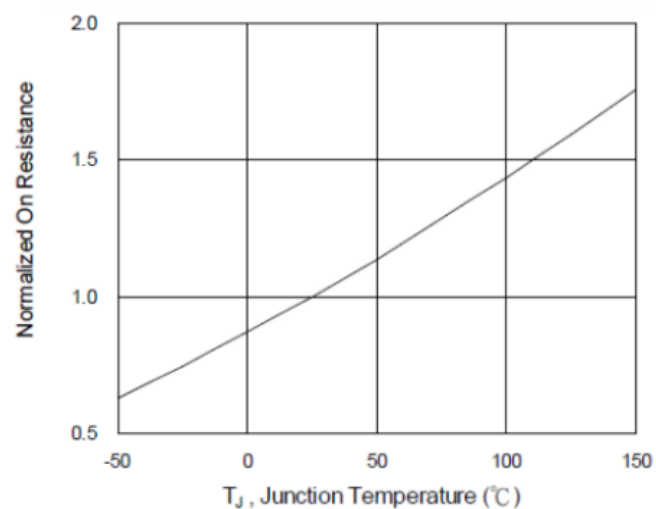
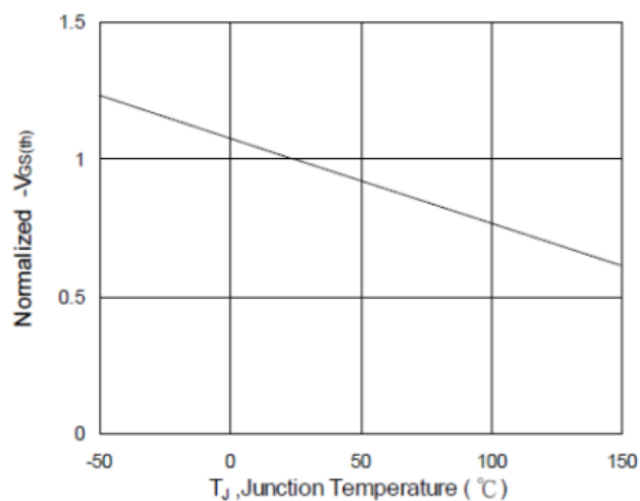
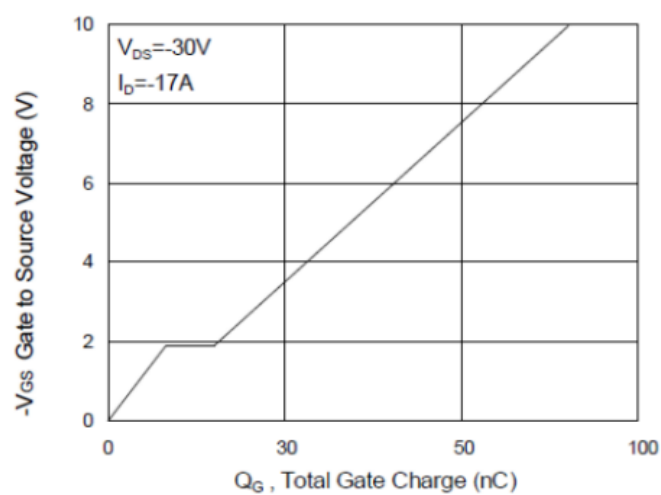
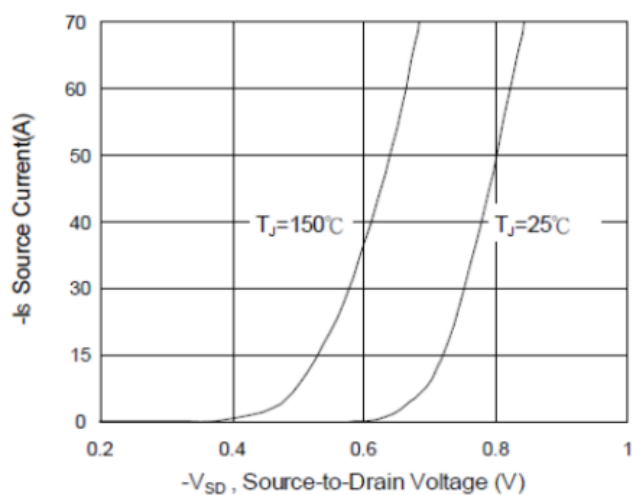
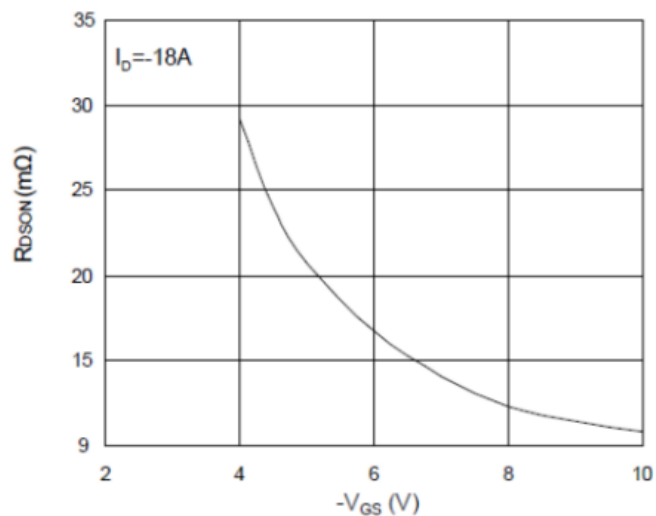
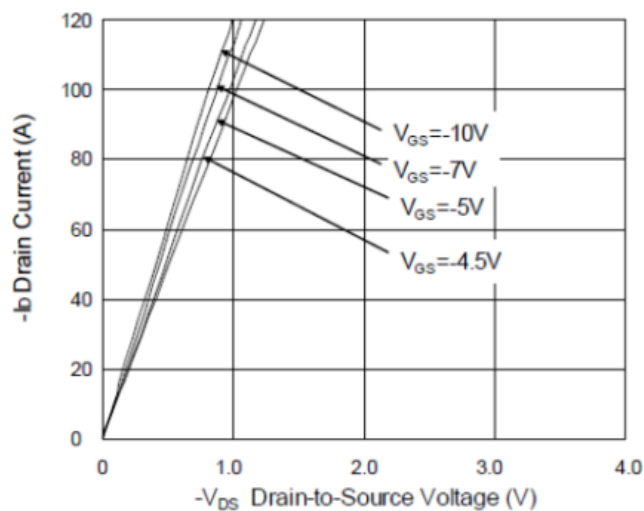
Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =-250uA	-60	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =-10V , I _D =-18A	---		14	mΩ
		V _{GS} =-4.5V , I _D =-12A	---		17	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0		-2.5	V
△ V _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	4.28	---	mV/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-48V , V _{GS} =0V , T _J =25°C	---	---	-1	uA
		V _{DS} =-48V , V _{GS} =0V , T _J =55°C	---	---	-5	
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA
g _{fs}	Forward Transconductance	V _{DS} =-10V , I _D =-18A	---	43	---	S
R _g	Gate Resistance	V _{DS} =0V , V _{GS} =0V , f=1MHz	---	2.6		Ω
Q _g	Total Gate Charge	V _{DS} =-30V , V _{GS} =-10V , I _D =-12A	---	85	---	nC
Q _{gs}	Gate-Source Charge		---	11	---	
Q _{gd}	Gate-Drain Charge		---	30	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} =-30V , V _{GS} =-10V , R _G =6Ω, I _D =-1A	---	18	---	ns
T _r	Rise Time		---	12	---	
T _{d(off)}	Turn-Off Delay Time		---	100	---	
T _f	Fall Time		---	68	---	
C _{iss}	Input Capacitance	V _{DS} =-30V , V _{GS} =0V , f=1MHz	---	4635	---	pF
C _{oss}	Output Capacitance		---	524	---	
C _{rss}	Reverse Transfer Capacitance		---	241	---	
Diode Characteristics						
I _S	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	---	---	-40	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V , I _S =-1A , T _J =25°C	---	---	-1.2	V

Note :

- 1.The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ 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}=-30V,V_{GS}=-10V,L=0.5mH,I_{AS}=-40A
- 4.The power dissipation is limited by 150°C junction temperature
- 5.The data is theoretically the same as I_D and I_S , in real applications , should be limited by total power dissipation.

Typical Characteristics



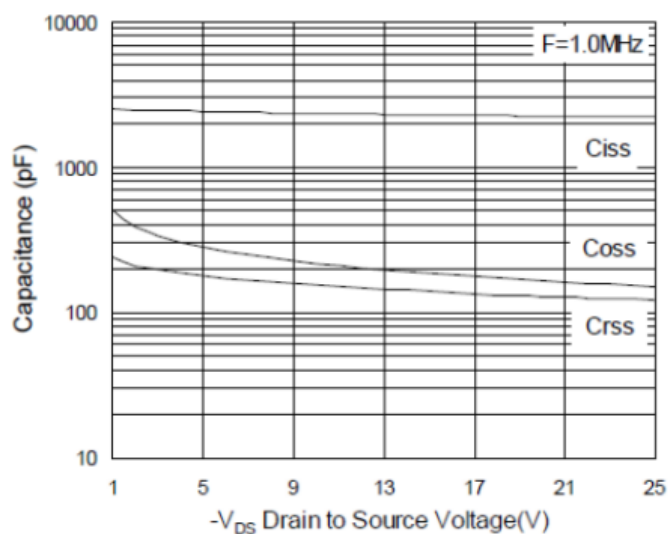


Fig.7 Capacitance

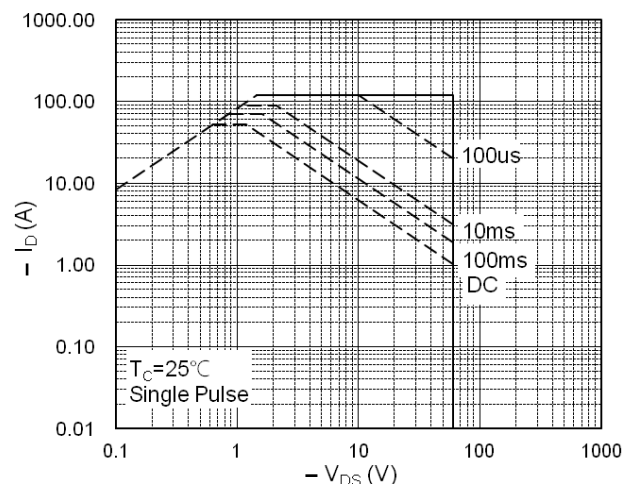


Fig.8 Safe Operating Area

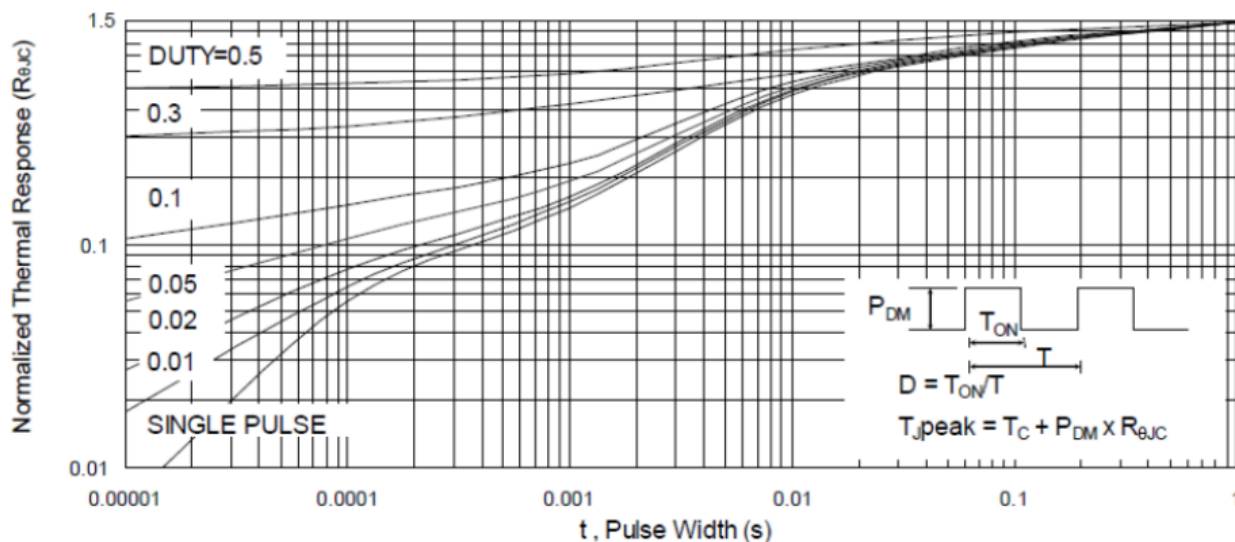


Fig.9 Normalized Maximum Transient Thermal Impedance

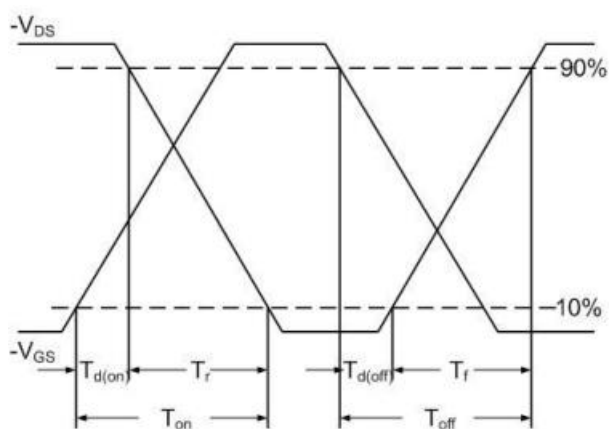


Fig.10 Switching Time Waveform

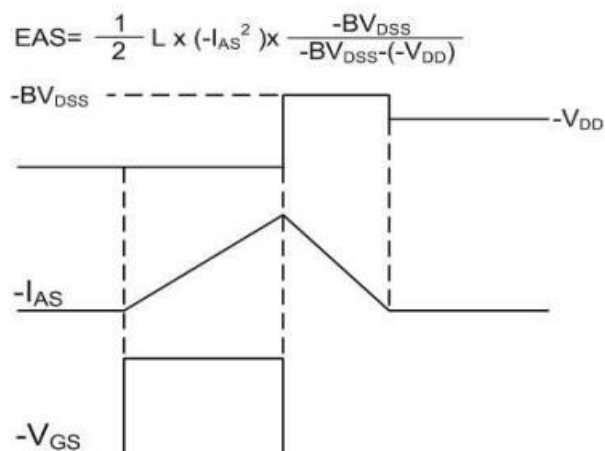
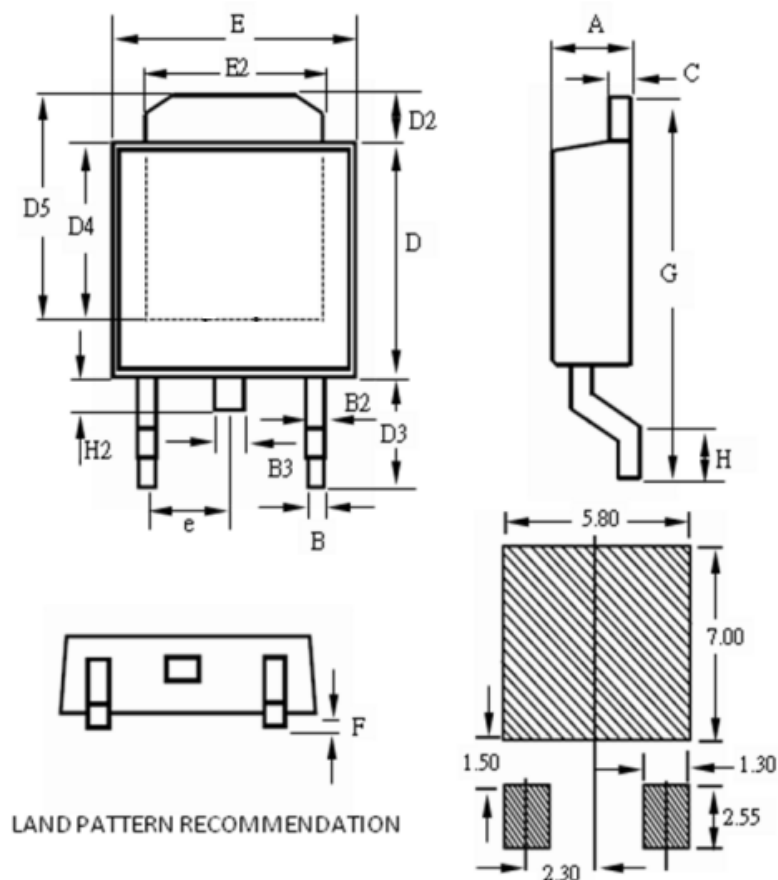


Fig.11 Unclamped Inductive Waveform

TO-252 Package Outline



SYMBOLS	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	2.10	--	2.50	0.083	--	0.098
B	0.30	--	0.89	0.012	--	0.035
B2	0.40	--	1.14	0.016	--	0.045
B3	0.60	--	1.00	0.024	--	0.039
C	0.40	--	0.89	0.016	--	0.035
D	5.30	--	6.25	0.209	--	0.246
D2	0.50	--	1.70	0.020	--	0.067
D3	2.20	--	3.40	0.087	--	0.134
D4	4.32	--	--	0.170	--	--
D5	5.21	--	--	0.205	--	--
E	6.30	--	6.73	0.248	--	0.265
E2	4.80	--	5.46	0.189	--	0.215
F	0.00	--	0.30	0.000	--	0.012
G	9.20	--	10.41	0.362	--	0.410
H	0.90	--	1.95	0.035	--	0.077
H2	0.50	--	1.10	0.020	--	0.043
e	--	2.30	--	--	0.091	--

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