

Features

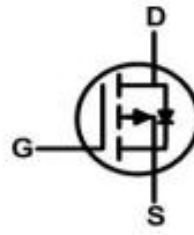
The TW30P06EF is the high cell density trench P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications. The TW30P06EF meet the RoHS and Green Product requirement with full function reliability approved.

Product Summary

BVDSS	RDSON	ID
-60V	24mΩ	-30A



PDFN5X6



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	-60	V
Gate-Source Voltage	VGS	±20	
Continuous Drain Current, VGS @ -10V	ID@TC =25°C	-30	A
Continuous Drain Current, VGS @ -10V	ID@TC=100°C	-25.5	
Pulsed Drain Current ①	IDM	-80	
Single Pulse Avalanche Energy ³	EAS	196	mJ
Maximum Power Dissipation(TC=25°C)	PD	79	W
Maximum Power Dissipation(TC=100°C)	PD	39.5	W
Storage Temperature Range	TSTG	-55 to 175	°C
Operating Junction Temperature	TJ	-55 to 175	°C

Thermal Data

Parameter	Symbol	Max.	Unit
Thermal Resistance Junction-Case	RθJC	1.9	°C/W

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BVDSS	VGS = 0V, ID = -250μA	-60			V
Zero Gate Voltage Drain Current	IDSS	VDS=-60V , VGS=0V			-1	μA
Gate-Body leakage Current	IGSS	VGS=±20V , VDS=0V			±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID=-250uA	-1	-1.8	-2.5	V
Static Drain-Source On-Resistance	RDS(on)	VGS =- 10V, ID = -15A		24	30	mΩ
		VGS =- 4.5V, ID = -10A		30	40	mΩ
Dynamic Parameters						
Input Capacitance	Ciss	VDS=-25V, VGS=0V, f=1.0MHz		4026		pF
Output Capacitance	Coss			134		pF
Reverse Transfer Capacitance	Crss			98		pF
Total Gate Charge	Qg	VDS=-25V, VGS=0V, f=1.0MHz		68		nC
Gate Source Charge	Qgs			10.5		nC
Gate Drain Charge	Qgd			13		nC
Switching Parameters						
Turn-On DelayTime	td(on)	VGS=-10V, VDS=-30V, RL=1.5Ω, RGEN=3Ω		12.2		ns
Turn-On Rise Time	tr			10		ns
Turn-Off DelayTime	td(off)			64		ns
Turn-Off Fall Time	tf			14		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Source-Drain Current (Body Diode)	ISD				30	A
Forward on Voltage ^(Note 3)	VSD	VGS=0V, IS=-20A			-1.2	V
Reverse Recovery Time	trr	IF=-20A, di/dt=100A/μs		26		NS
Reverse Recovery Charge	Qrr	IF=-20A, di/dt=100A/μs		29		NC

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

Figure 1. Output Characteristics

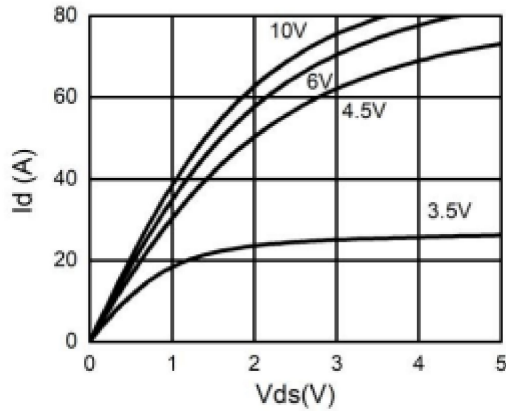


Figure 2. Transfer Characteristics

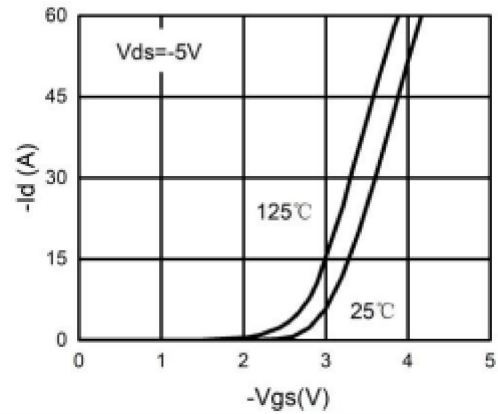


Figure 3. Power Dissipation

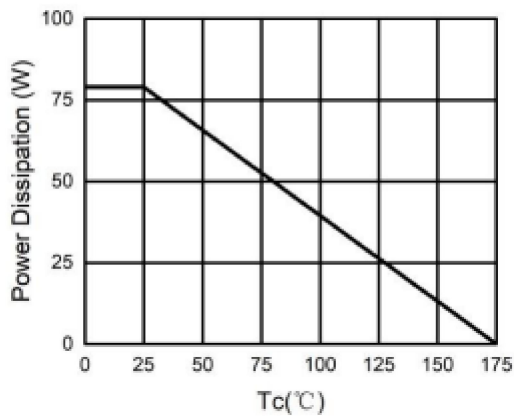


Figure 4. Drain Current

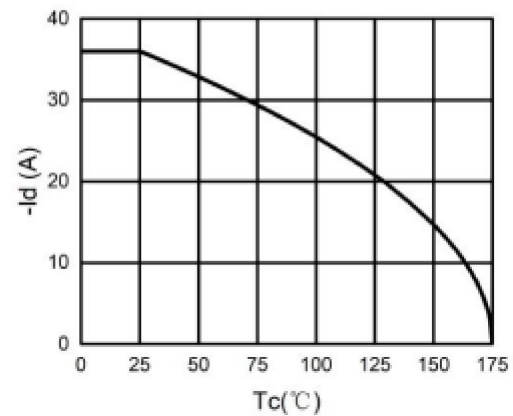


Figure 5. BV_{DSS} vs Junction Temperature

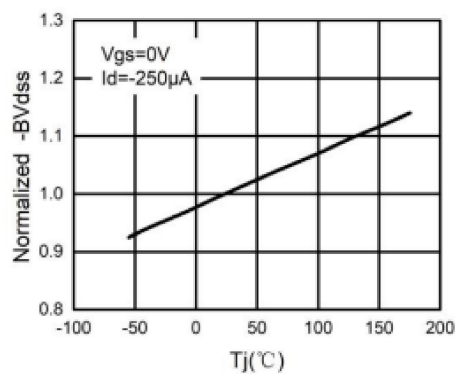
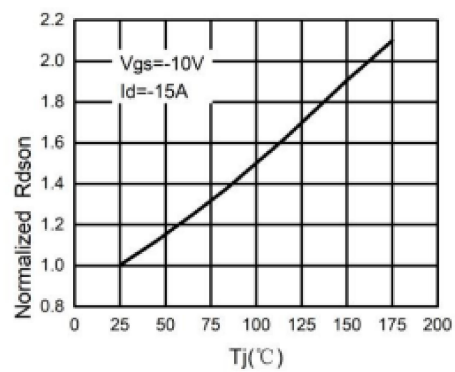


Figure 6. $R_{DS(ON)}$ vs Junction Temperature



Typical Electrical and Thermal Characteristics

Figure 7. Gate Charge Waveforms

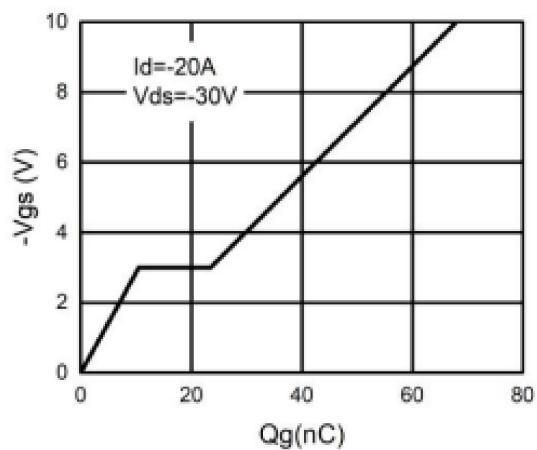


Figure 8. Capacitance

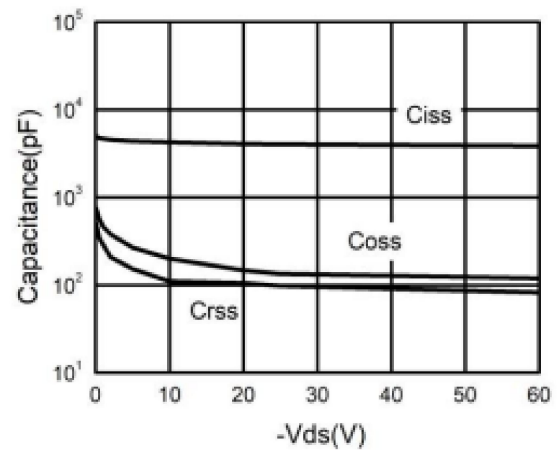


Figure 9. Body-Diode Characteristics

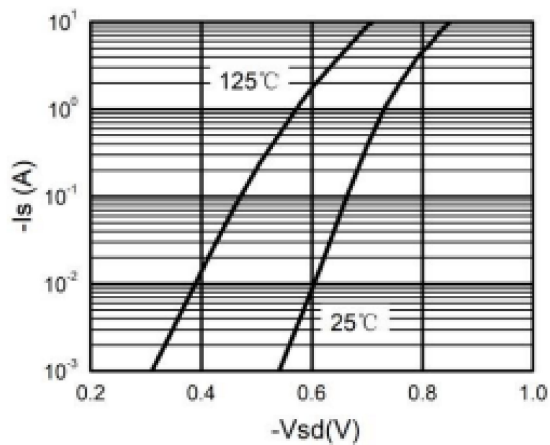
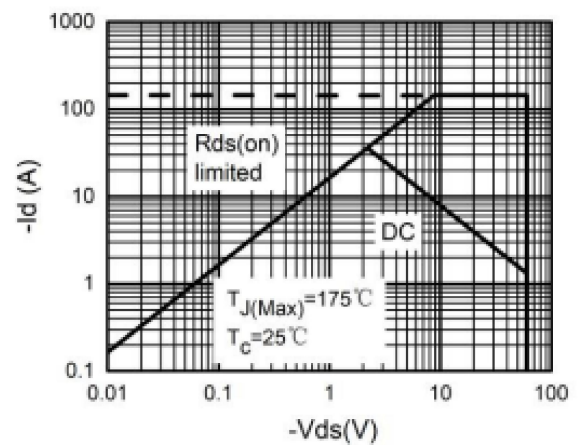
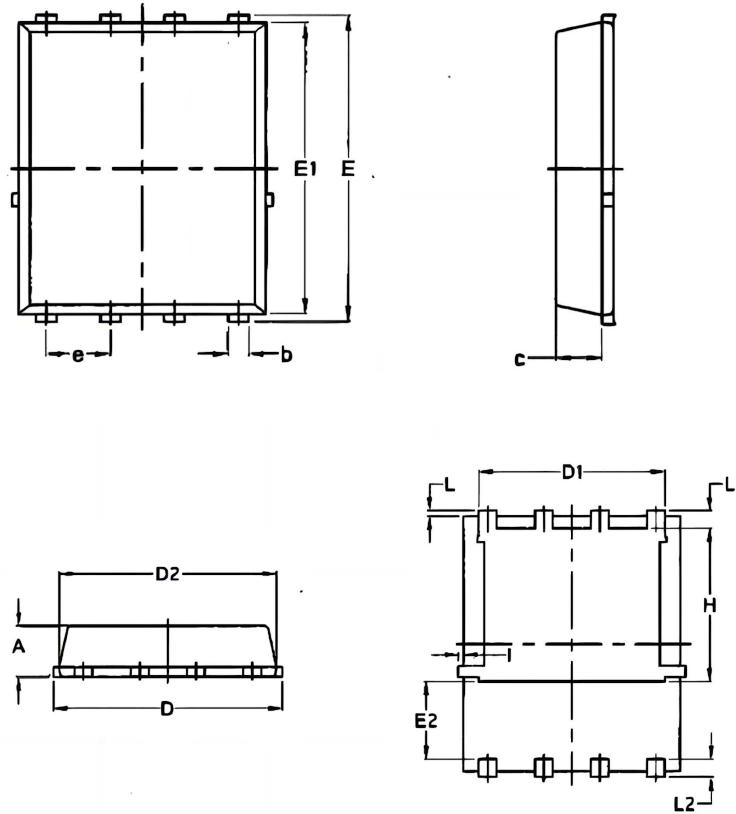


Figure 10. Maximum Safe Operating Area



PDFN5X6 Package Outline Dimesions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070