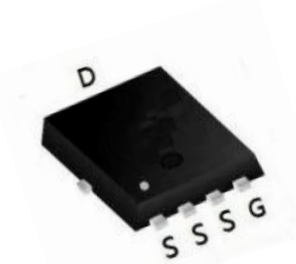


Features

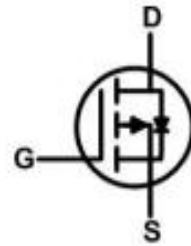
The TW80P04EF is the high cell density trench P-ch MOSFETs, which provide excellent RDS(ON) and gate charge for most of the synchronous buck converter applications. The TW80P04EF meet the RoHS and Green Product requirement with full function reliability approved.

Product Summary

V _{DS}	-40V
I _D	-80A
R _{DS(ON)} (at V _{GS} =10V)	< 4.3mΩ
R _{DS(ON)} (at V _{GS} =4.5V)	< 5.9mΩ



PDFN5X6



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	-40	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current, V _{GS} @ -10V	I _D @TC =25°C	-80	A
Continuous Drain Current, V _{GS} @ -10V	I _D @TC=100°C	-56	
Pulsed Drain Current ①	I _{DM}	-190	
Single Pulse Avalanche Energy ³	E _{AS}	576	mJ
Avalanche Current	I _{AS}	-56	A
Total Power Dissipation	P _D @TC=25°C	58	W
Storage Temperature Range	T _{STG}	-55 to 175	°C
Operating Junction Temperature	T _J	-55 to 175	°C

Thermal Data

Parameter	Symbol	Max.	Unit
Thermal Resistance Junction-Ambient(t ≤ 10S)	R _{θJA}	20	°C/W
Thermal Resistance Junction-ambient ¹ (SteadyState)		50	°C/W
Thermal Resistance Junction-Case	R _{θJC}	1.6	°C/W

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters ③						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = -250μA	-40			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-40V , V _{GS} =0V			-1	μA
Gate-Body leakage Current	I _{GSS}	V _{GS} =±20V , V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250uA	-1	-1.7	-2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =- 10V, I _D = -20A		4.3	5.3	mΩ
		V _{GS} =- 4.5V, I _D = -20A		5.9	7.6	mΩ
Dynamic Parameters ④						
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1.0MHz		7000		pF
Output Capacitance	C _{oss}			820		pF
Reverse Transfer Capacitance	C _{rss}			540		pF
Total Gate Charge	Q _g	V _{DS} =-20V, V _{GS} =0V, f=1.0MHz		6638		nC
Gate Source Charge	Q _{gs}			545		nC
Gate Drain Charge	Q _{gd}			345		nC
Switching Parameters ④						
Turn-On DelayTime	td(on)	V _{GS} =-10V, V _{DS} =-20V, R _L =1Ω, R _{GEN} =3Ω		16		ns
Turn-On Rise Time	tr			17		ns
Turn-Off DelayTime	td(off)			68		ns
Turn-Off Fall Time	tf			31		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Source-Drain Current (Body Diode)	I _{SD}				-80	A
Forward on Voltage ^(Note 3)	V _{SD}	V _{GS} =0V, I _S =-20A			1.2	V
Reverse Recovery Time	trr	I _F =-20A, di/dt=500A/μs		24		NS
Reverse Recovery Charge	Qrr	I _F =-20A, di/dt=500A/μs		140		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

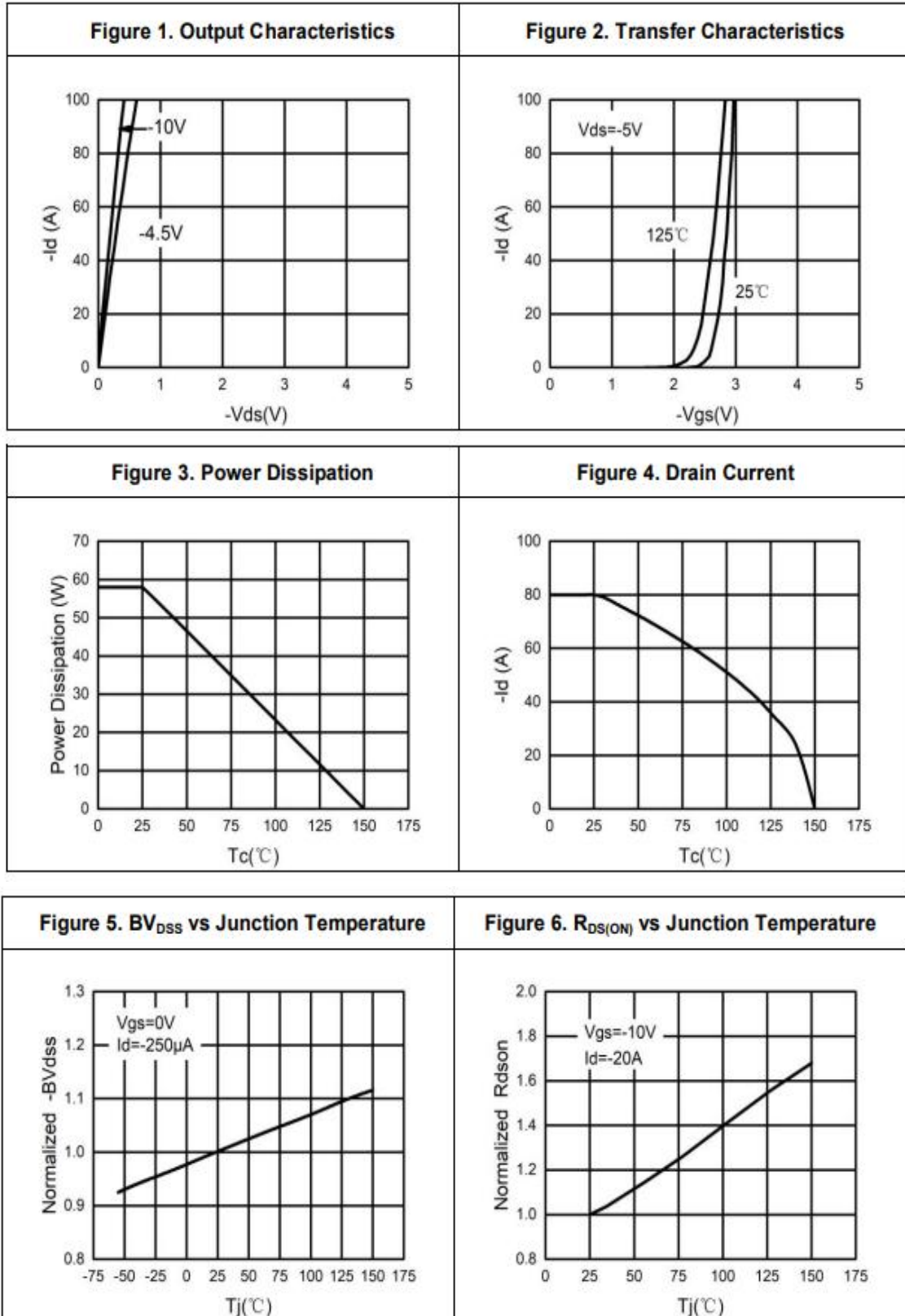


Figure 7. Gate Charge Waveforms

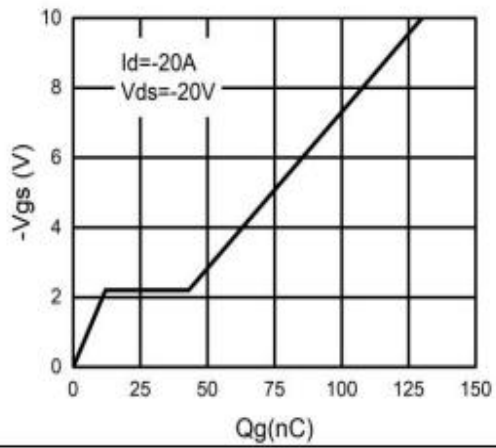


Figure 8. Capacitance

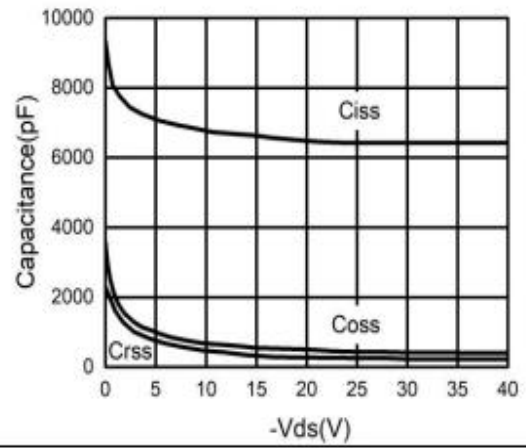


Figure 9. Body-Diode Characteristics

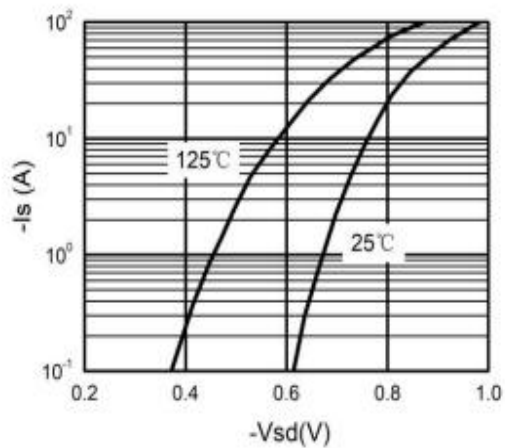
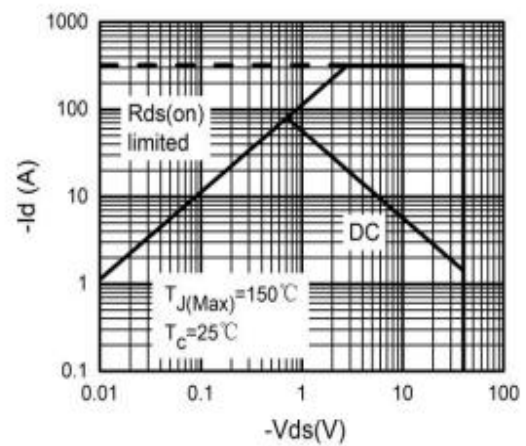
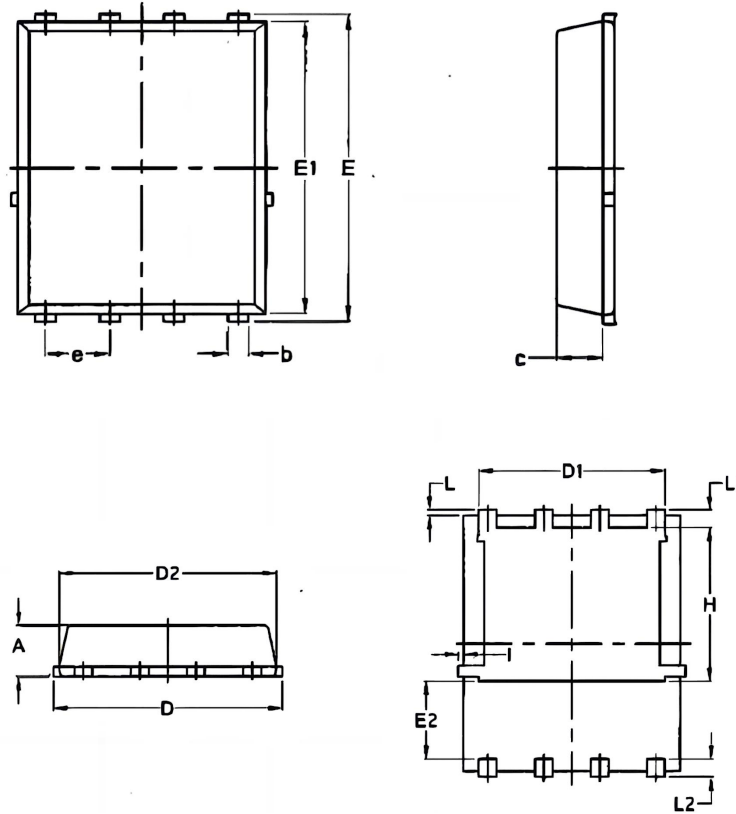


Figure 10. Maximum Safe Operating Area



PDFN5X6 Package Outline Dimesions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	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
I	/	0.18	/	0.0070