

Features

The TW100N03EF is the high cell density trench N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

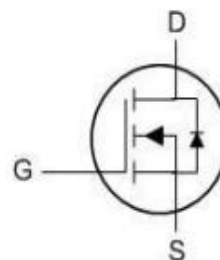
The TW100N03EF meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

BVDSS	RDSON	ID
30V	3.5mΩ	100A



PDFN5X6



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	30	V
Gate-Source Voltage	VGS	±20	
Continuous Drain Current, VGS @ 10V ¹	ID@TC=25°C	100	A
Continuous Drain Current, VGS @ 10V ¹	ID@TC=100°C	50	
Continuous Drain Current, VGS @ 10V ¹	ID@TA=25°C	19	
Continuous Drain Current, VGS @ 10V ¹	ID@TA=70°C	16	
Pulsed Drain Current ①	IDM	162	
Single Pulse Avalanche Energy ³	EAS	144.7	mJ
Avalanche Current	IAS	53.8	A
Total Power Dissipation ⁴	PD@TC=25°C	62.5	W
Total Power Dissipation ⁴	PD@TA=25°C	2.24	W
Storage Temperature	TSTG	-55 to 175	°C
Operating Junction	TJ	-55 to 175	

Thermal Data

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-Ambient ¹	RθJA		62	°C/W
Thermal Resistance Junction-Ambient 1 (t ≤ 10s)	RθJA		25	°C/W
Thermal Resistance Junction-Case ¹	RθJC		2.4	°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	30			V
Zero Gate Voltage Drain Current	IDSS	VDS = 30V, VGS =0V			1	μA
Gate-Body leakage Current	IGSS	VDS =0V, VGS = ±20V			±100	nA
Gate Threshold Voltage	VGS(th)	VDS =VGS, ID = 250μA	1	1.5	2.5	V
Static Drain-Source On-Resistance	RDS(on)	VGS = 10V, ID = 30A		3.5	4.7	mΩ
		VGS = 4.5V, ID = 20A		6.0	10	mΩ
Dynamic Parameters						
Input Capacitance	Ciss	VDS=15V,VGS=0V, F=1.0MHz		2100		pF
Output Capacitance	Coss			326		pF
Reverse Transfer Capacitance	Crss			282		pF
Total Gate Charge	Qg	VDS =15V, ID =30A, VGS =10V		45		nC
Gate Source Charge	Qgs			3		nC
Gate Drain Charge	Qgd			15		nC
Switching Parameters						
Turn-On DelayTime	td(on)	VDS=15V, ID=30A, RGEN=3Ω, VGS =10V		21		ns
Turn-On Rise Time	tr			32		ns
Turn-Off DelayTime	td(off)			59		ns
Turn-Off Fall Time	tf			34		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Diode Forward Voltage ^(Note 3)	VSD	VGS = 0V, IS=30A			1.2	V
Diode Forward Current ^(Note 2)	IS				50	A
Reverse Recovery Time	Trr	F=20A,dI/dt=100A/μs		15		nS
Reverse Recovery Charge	Qrr			4		nC

Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 10 sec.
3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

Typical Electrical and Thermal Characteristics

Figure1: Output Characteristics

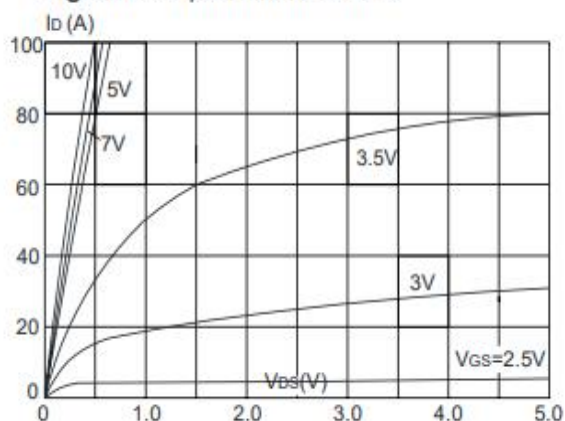


Figure 2: Typical Transfer Characteristics

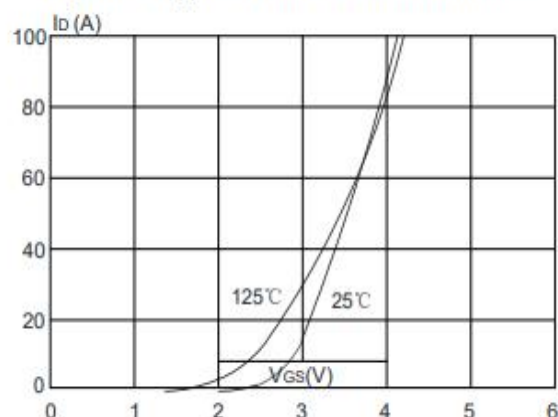


Figure 3: On-resistance vs. Drain Current

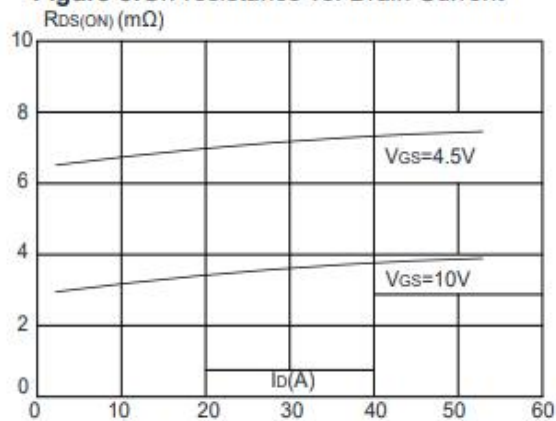


Figure 4: Body Diode Characteristics

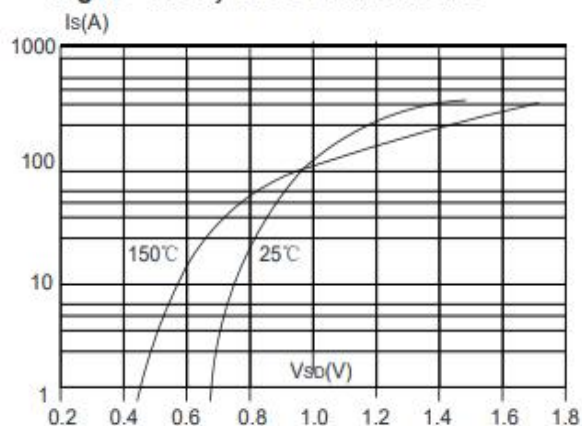


Figure 5: Gate Charge Characteristics

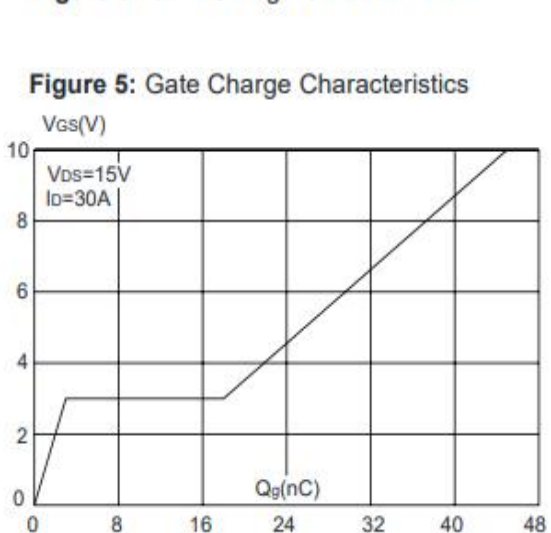
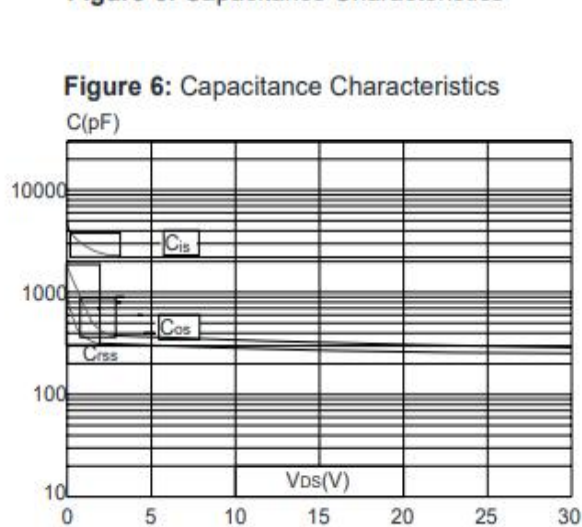


Figure 6: Capacitance Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

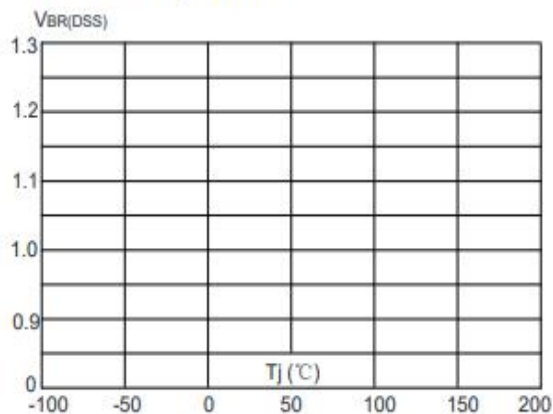


Figure 8: Normalized on Resistance vs. Junction Temperature

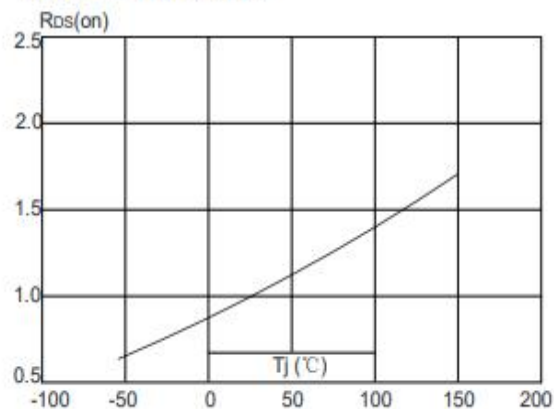


Figure 9: Maximum Safe Operating Area

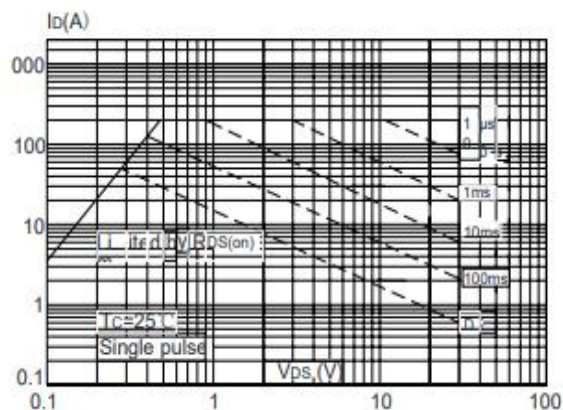


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

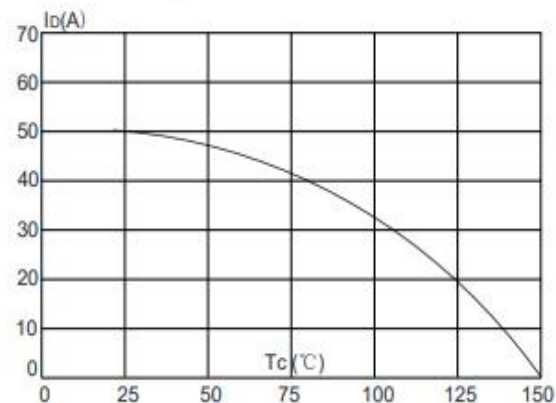
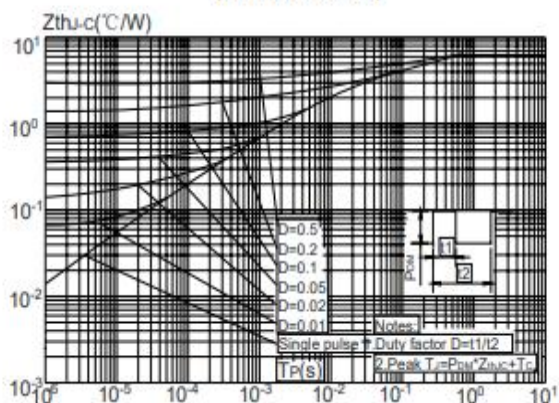
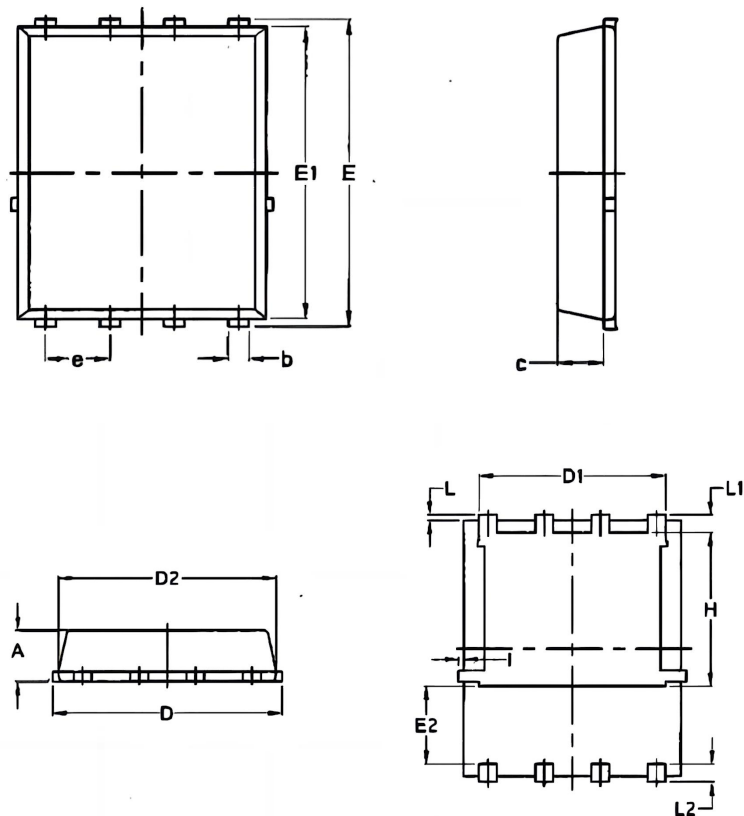


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case (PDFN3.3*3.3-8L)



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