Features

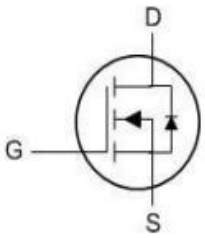
The TWS75N10EF is the high cell density trenched N-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

The TWS75N10EF meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

BVDSS	RDSON	ID
100V	7.3mΩ	75A

PDFN5X6



Maximum Ratings(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	100	V
Gate-Source Voltage	VGS	±20	
Continuous Drain Current	ID@TC =25℃	75	A
Continuous Drain Current	ID@TC=100℃	49	
Pulsed Drain Current ①	IDM	150	
Single Pulse Avalanche Energy3	EAS	90	mJ
Power Dissipation ②	PD@TC=25℃	97	W
Storage Temperature	TSTG	-55 to 150	℃
Operating Junction	TJ	-55 to 150	

Thermal Data

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-Case	RθJC		1.3	℃/W

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BV_{DSS}	VGS = 0V, ID = 250μA	100			V
Zero Gate Voltage Drain Current	I_{DSS}	VDS = 100V, VGS =0V			1	μA
Gate-Body leakage Current	I_{GSS}	VDS =0V, VGS = ±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VDS =VGS, ID = 250μA	1.0	1.6	2.5	V
Static Drain-Source On-Resistance	RDS(on)	VGS = 10V, ID = 20A		7.3	9.2	mΩ
		VGS=4.5V, ID=8A		9	13.5	mΩ
Dynamic Parameters						
Input Capacitance	C_{iss}	VDS=50V, VGS=0V, f=1.0MHz		2046		pF
Output Capacitance	C_{oss}			865		pF
Reverse Transfer Capacitance	C_{rss}			25		pF
Total Gate Charge	Q_g	VDS=50V, ID=30A, VGS=10V		39.4		nC
Gate Source Charge	Q_{gs}			5.2		nC
Gate Drain Charge	Q_{gd}			9.8		nC
Switching Parameters						
Turn-On DelayTime	$t_{d(on)}$	VDD=50V, ID=25A, RG=6Ω, VGS=10V		20		ns
Turn-On Rise Time	tr			5.2		ns
Turn-Off DelayTime	$t_{d(off)}$			49		ns
Turn-Off Fall Time	tf			12		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		IS			75	A
Maximum Pulsed Drain to Source Diode Forward Current		ISM			300	A
Drain to Source Diode Forward Voltage	VSD	VGS=0V, IS=30A			1.2	V
Body Diode Reverse Recovery Time	trr	TJ=25℃, IF=12A,dI/dt=100A/μs		49		ns
Body Diode Reverse Recovery Charge	Qrr			85		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

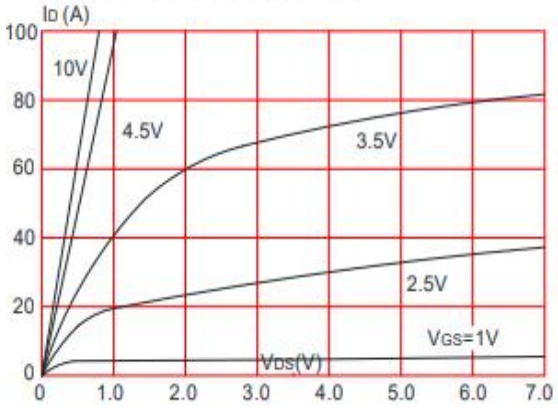


Figure 2: Typical Transfer Characteristics

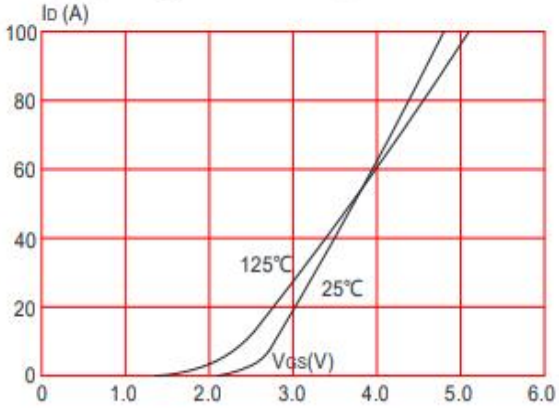


Figure 3: On-resistance vs. Drain Current

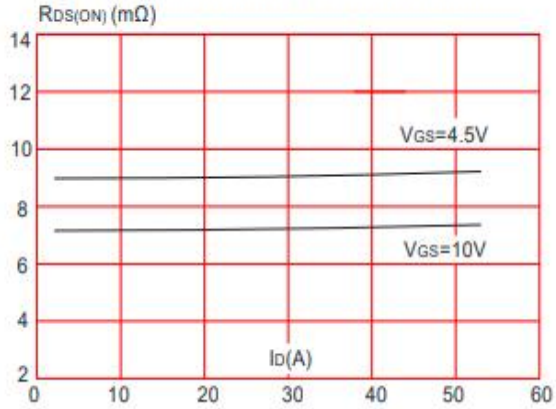


Figure 4: Body Diode Characteristics

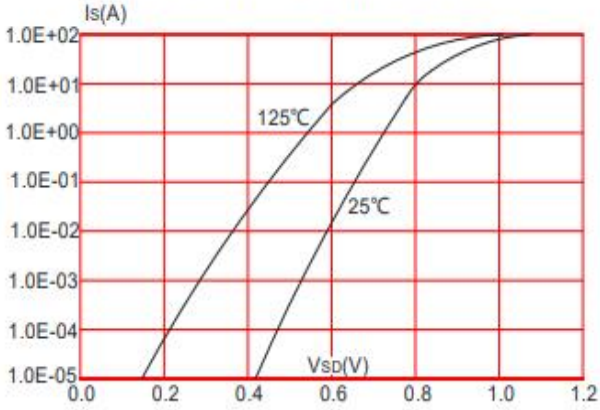


Figure 5: Gate Charge Characteristics

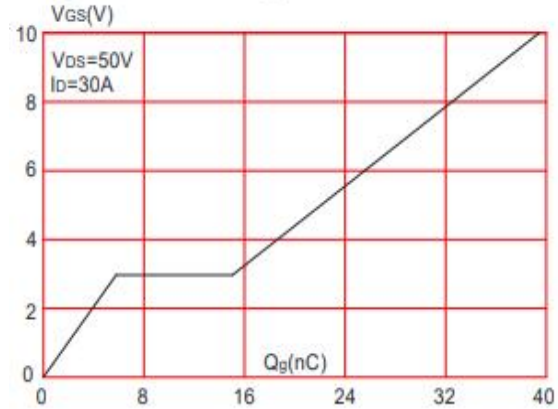
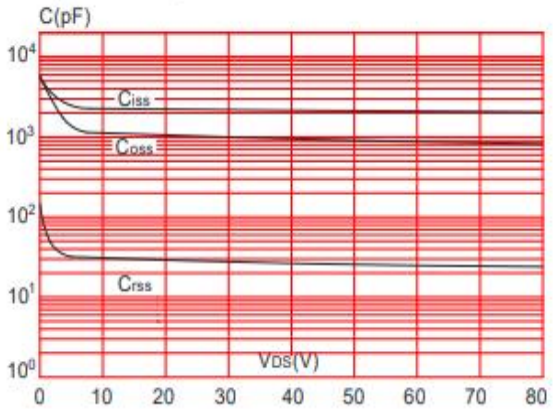


Figure 6: Capacitance Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

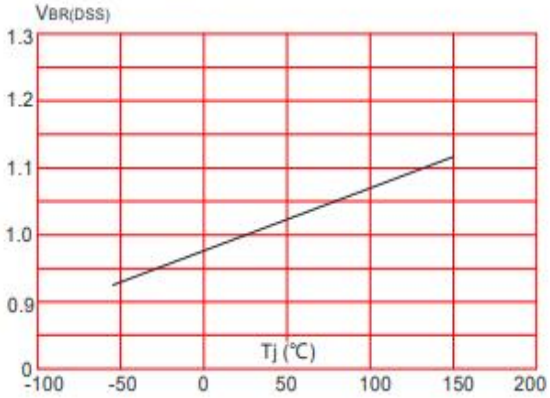


Figure 8: Normalized on Resistance vs. Junction Temperature

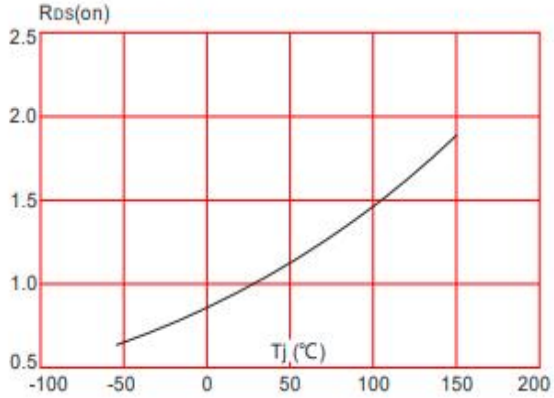


Figure 9: Maximum Safe Operating Area

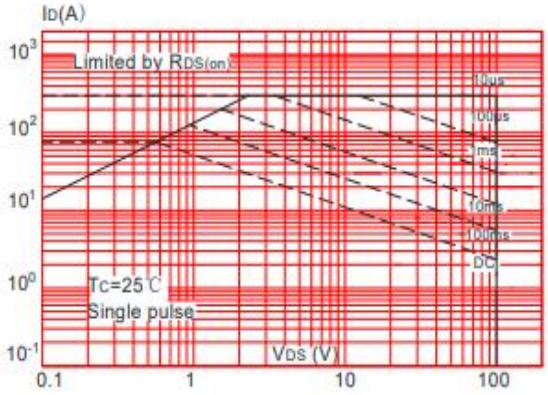


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

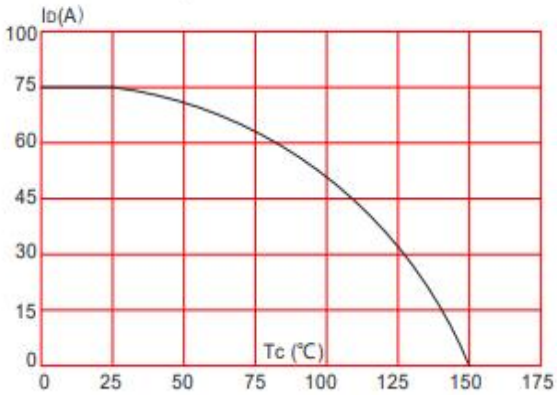
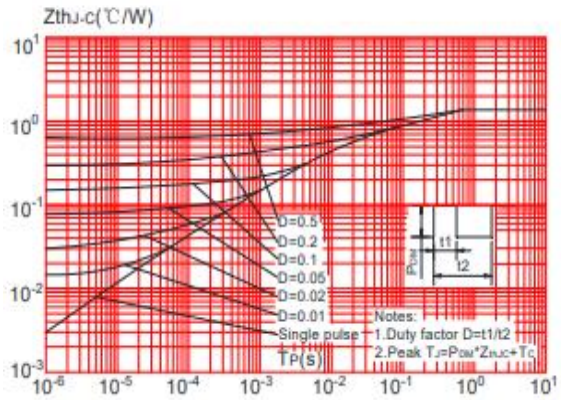
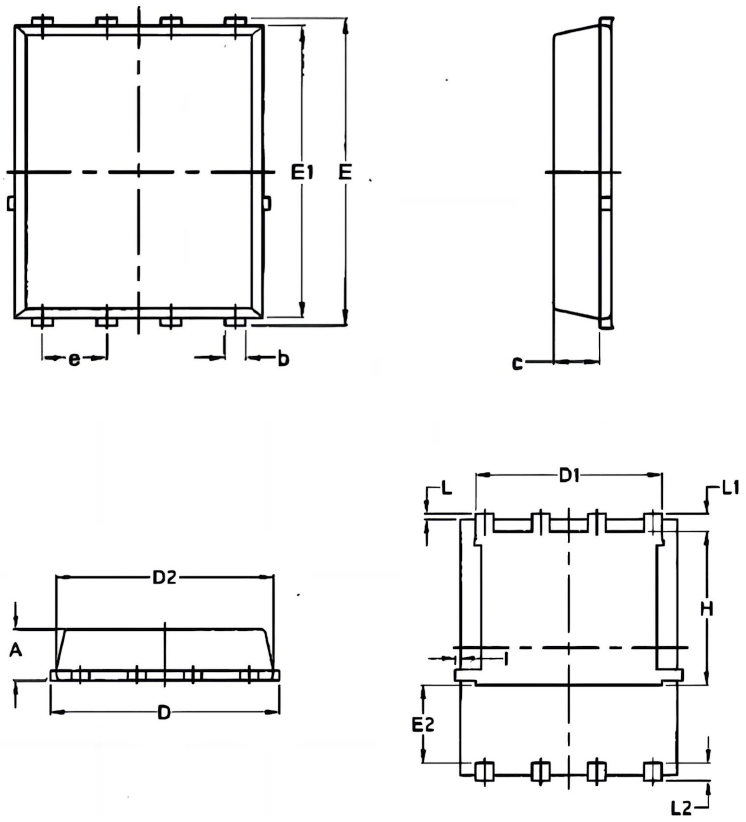


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



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
I	/	0.18	/	0.0070