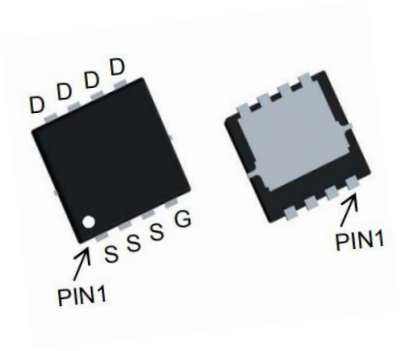
Features

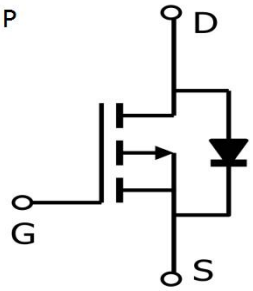
The TW15P06CC is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications. The TW15P06CC meet the RoHS and Green Product requirement with full function reliability approved.

Product Summary

- V_{DS} -60V
- I_D -15A
- $R_{DS(ON)}$ (at V_{GS} =-10V) < 85mΩ
- $R_{DS(ON)}$ (at V_{GS} =-4.5V) < 90mΩ



PDFN3X3



Maximum Ratings(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current, VGS @ -10V	ID@TC =25℃	-15	A
Continuous Drain Current, VGS @ -10V	ID@TC=100℃	-10	
Pulsed Drain Current ①	I_{DM}	-30	
Single Pulse Avalanche Energy3	EAS	18.1	mJ
Avalanche Current	IAS	-13	A
Total Power Dissipation	PD@TC=25℃	25	W
StorageTemperature Range	TSTG	-55 to 150	℃
Operating Junction Temperature	TJ	-55 to 150	℃

Thermal Data

Parameter	Symbol	Max.	Unit
Thermal Resistance Junction-Ambient	RθJA	62	℃/W
Thermal Resistance Junction-Case	RθJC	5	℃/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}	VGS = 0V, ID = -250μA	-60			V
Zero Gate Voltage Drain Current	I_{DSS}	VDS=-48V , VGS=0V , TJ=25℃			-1	μA
Gate-Body leakage Current	I_{GSS}	VGS=±20V , VDS=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID=-250uA	-1.2		-2.5	V
Static Drain-Source On-Resistance	RDS(on)	VGS =- 10V, ID = -10A		70	85	mΩ
		VGS =- 4.5V, ID = -6A		88	90	mΩ
Dynamic Parameters ④						
Input Capacitance	Ciss	VDS=-15V , VGS=0V , f=1MHz		585		pF
Output Capacitance	Coss			100		pF
Reverse Transfer Capacitance	Crss			85		pF
Total Gate Charge	Qg	VDS=-15V , VGS=-4.5V , ID=-15A		6.1		nC
Gate Source Charge	Qgs			3.1		nC
Gate Drain Charge	Qgd			1.8		nC
Switching Parameters ④						
Turn-On DelayTime	td(on)	VDD=-15V , VGS=-10V , RG=3.3Ω, ID=-15A		2.6		ns
Turn-On Rise Time	tr			8.6		ns
Turn-Off DelayTime	td(off)			33.6		ns
Turn-Off Fall Time	tf			6		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		IS			-15	A
Maximum Pulsed Drain to Source Diode Forward C		ISM			-30	A
Drain to Source Diode Forward Voltage	VSD	VGS=0V , IS=-1A , TJ=25℃			-1.2	V
Body Diode Reverse Recovery Time	trr	IF=-15A , dI/dt=100A/μs , TJ =25℃		6.1		NS
Body Diode Reverse Recovery Charge	Qrr			1.4		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

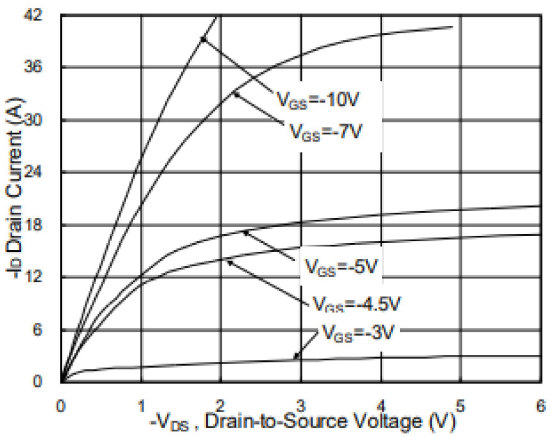


Fig.1 Typical Output Characteristics

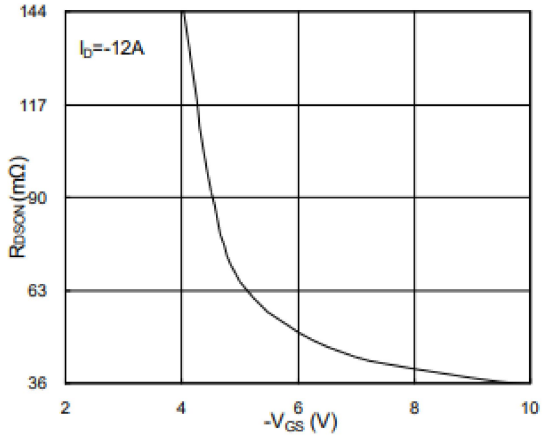


Fig.2 On-Resistance v.s Gate-Source

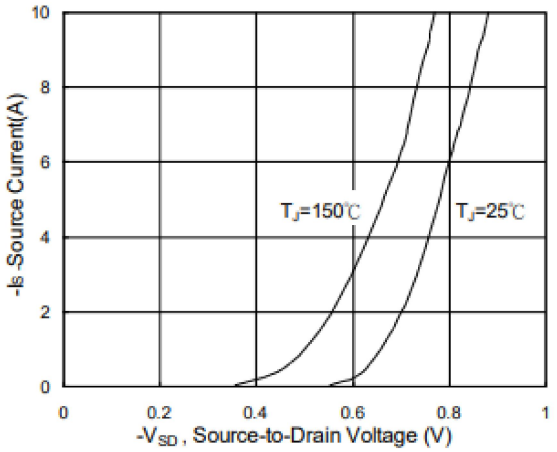


Fig.3 Forward Characteristics Of Reverse

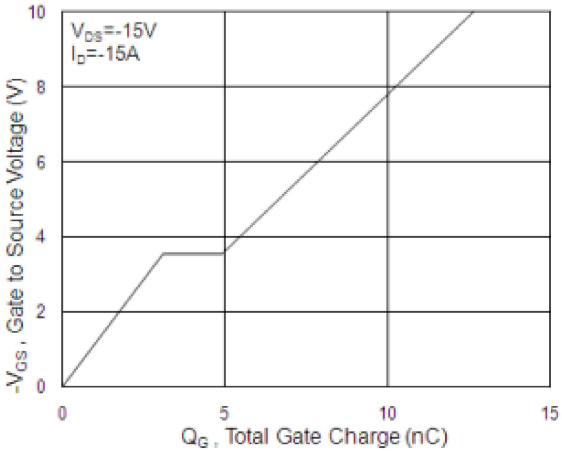


Fig.4 Gate Charge Characteristics

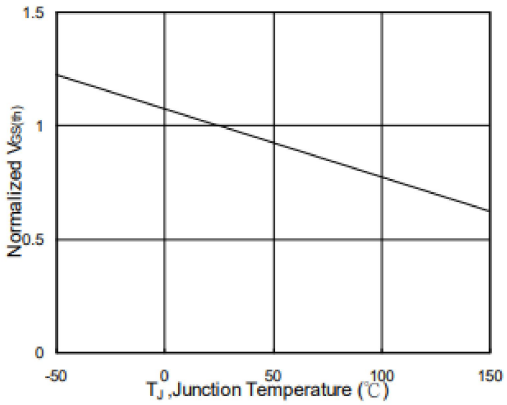


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

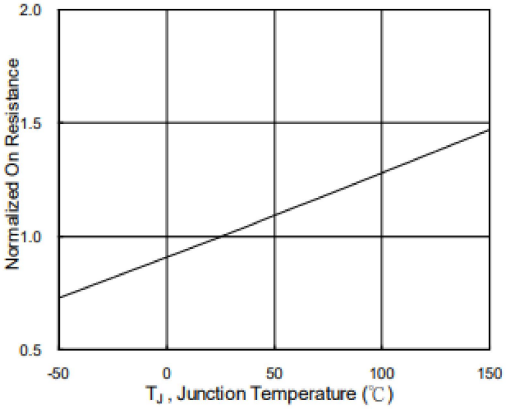


Fig.6 Normalized R_{DSON} vs. T_J

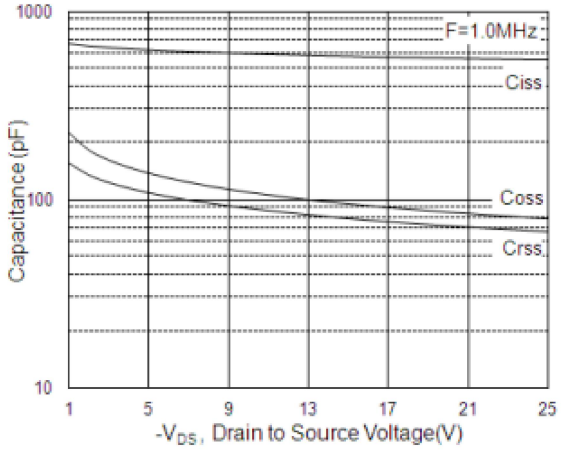


Fig.7 Capacitance

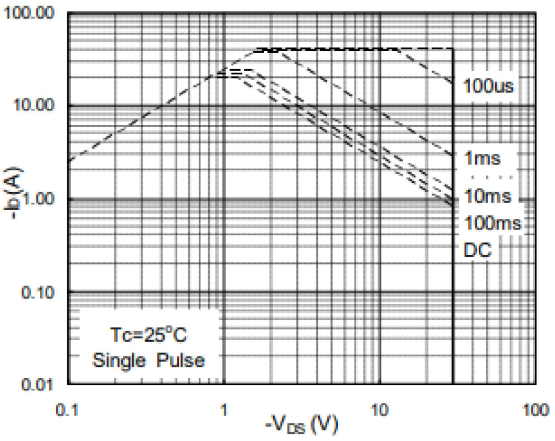


Fig.8 Safe Operating Area

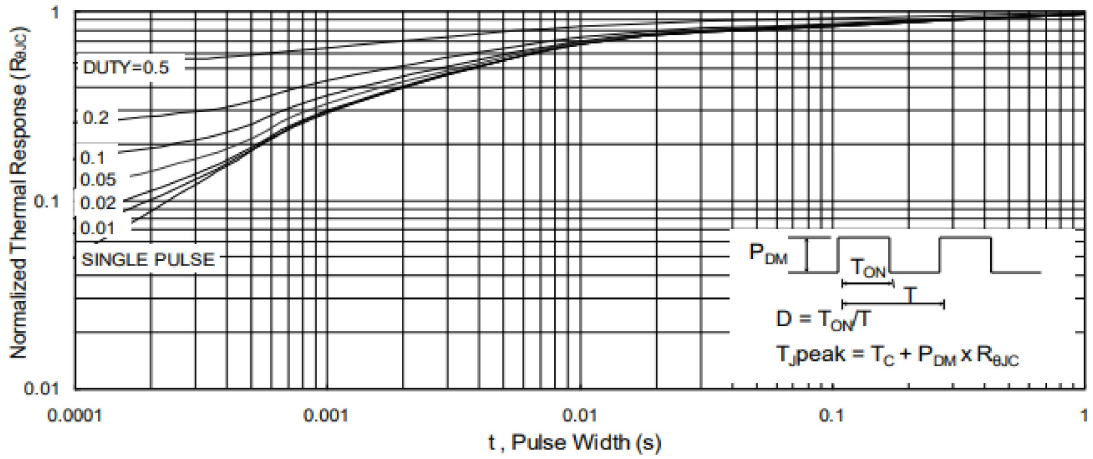


Fig.9 Normalized Maximum Transient Thermal Impedance

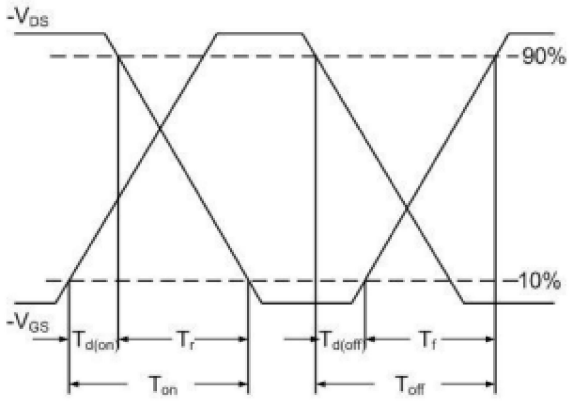


Fig.10 Switching Time Waveform

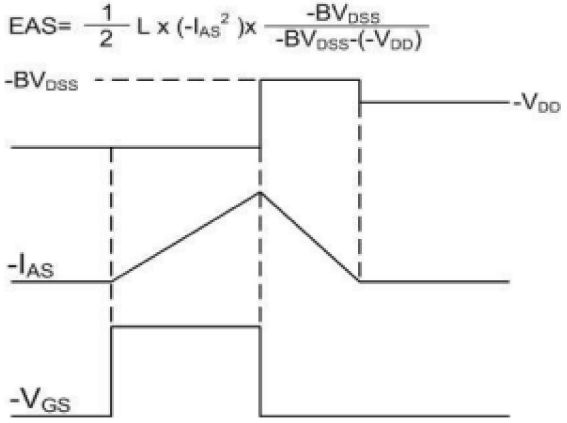
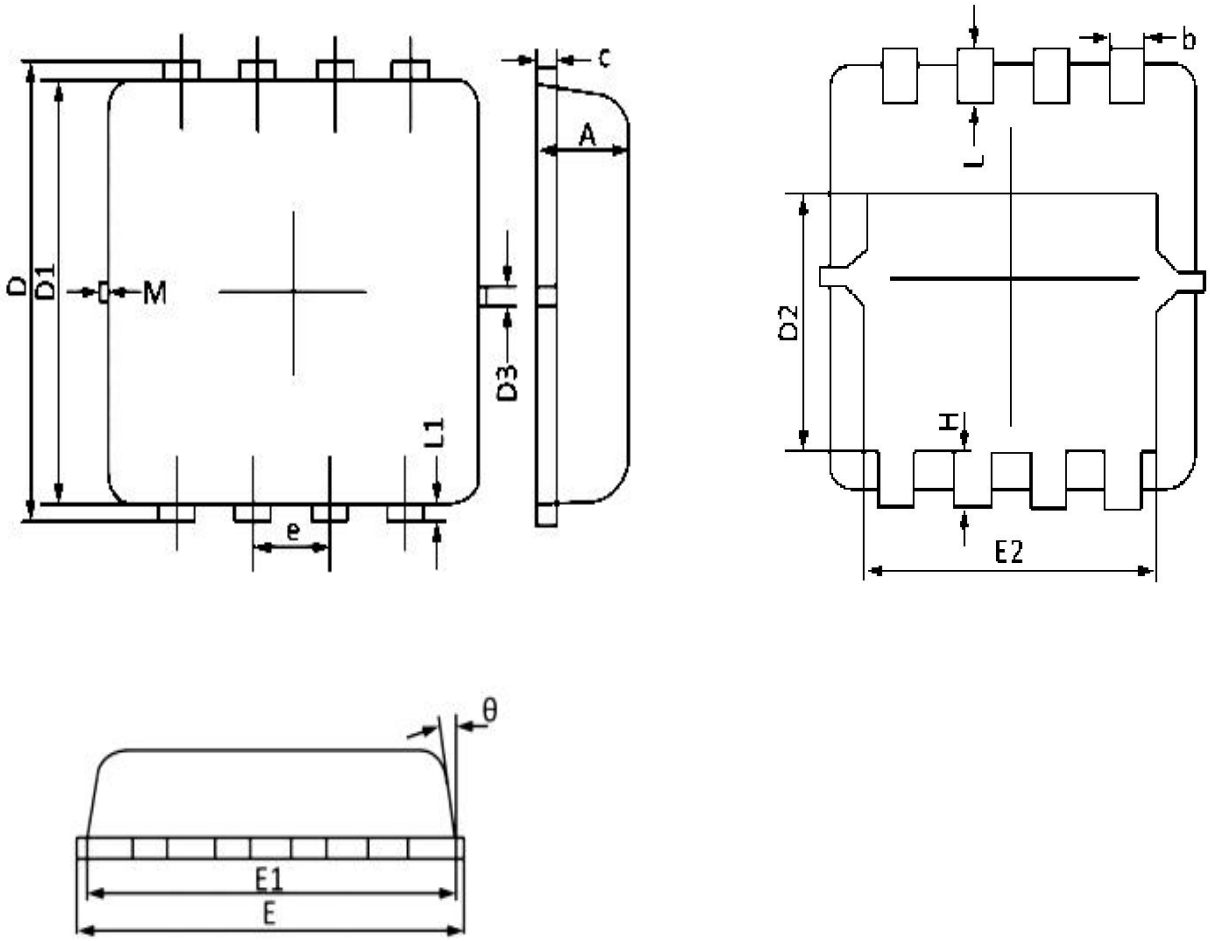


Fig.11 Unclamped Inductive Switching Waveform

PDFN3X3 Package Outline Dimesions



DIMENSIONS(unit:mm)

Symbol	Min	Typ	Max	Sybol	Min	Typ	Max
A	0.70	0.75	0.80	**b**	0.25	0.30	0.35
C	0.10	0.15	0.25	**D**	3.25	3.35	3.45
D1	3.00	3.10	3.20	**D2**	1.78	1.88	1.98
D3		0.13		**E**	3.20	3.30	3.40
E1	3.00	3.15	3.20	**E2**	2.39	2.49	2.59
e	0.65BSC			**H**	0.30	0.39	0.50
L	0.30	0.40	0.50	**L1**		0.13	
θ		10°	12°	**M**	★	★	0.15