

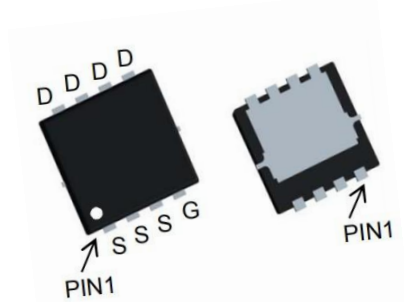
Features

The TW30P04CC is the high cell density trench P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

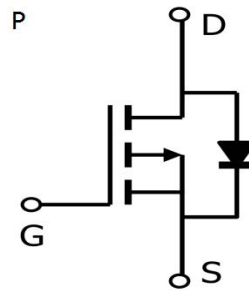
The TW30P04CC meet the RoHS and Green Product requirement with full function reliability approved.

Product Summary

V _{DS}	-40V
I _D	-30A
R _{DS(ON)} (at V _{GS} = -4.5V)	< 13mΩ
R _{DS(ON)} (at V _{GS} = -2.5V)	< 20mΩ



PDFN3X3



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}	-30	A
Continuous Drain Current, V _{GS} @ -10V	I _{D@TC=100°C}	-20	
Continuous Drain Current, V _{GS} @ -10V1	I _{D@TA=25°C}	-4.5	
Continuous Drain Current, V _{GS} @ -10V1	I _{D@TA=70°C}	-4	
Pulsed Drain Current ①	I _{DM}	-120	
Single Pulse Avalanche Energy3	E _{AS}	80	mJ
Avalanche Current	I _{AS}	-13	A
Total Power Dissipation	P _{D@TC=25°C}	21	W
Total Power Dissipation	P _{D@TA=25°C}	2	W
Storage Temperature Range	T _{STG}	-55 to 150	°C
Operating Junction Temperature	T _J	-55 to 150	°C
Thermal Data			
Parameter	Symbol	Max.	Unit
Thermal Resistance Junction-Ambient ¹	R _{θJA}	64.3	°C/W
Thermal Resistance Junction-Case	R _{θJC}	6	°C/W

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters ③						
Drain-Source Breakdown Voltage	BVDSS	VGS = 0V, ID = -250μA	-40			V
Zero Gate Voltage Drain Current	IDSS	VDS=-24V , VGS=0V			-1	μA
Gate-Body leakage Current	IGSS	VGS=±20 V , VDS=0V			±100	nA
Gate Threshold Voltage	VGS(th)	VGS=VDS , ID=-250uA	-1.0	-1.6	-2.5	V
Static Drain-Source On-Resistance	RDS(on)	VGS =- 10V, ID = -10A		10	13	mΩ
		VGS =- 4.5V, ID = -6A		14.2	20	mΩ
Dynamic Parameters ④						
Input Capacitance	Ciss	VDS=-15V , VGS=0V , f=1MHz		3050		pF
Output Capacitance	Coss			282		pF
Reverse Transfer Capacitance	Crss			230		pF
Total Gate Charge	Qg	VDS=-15V , VGS=-4.5V , ID=-15A		28		nC
Gate Source Charge	Qgs			8		nC
Gate Drain Charge	Qgd			8.5		nC
Switching Parameters ④						
Turn-On DelayTime	td(on)	VDD=-15V , VGS=-10V , RG=3.3Ω, ID=-15A		38		ns
Turn-On Rise Time	tr			31		ns
Turn-Off DelayTime	td(off)			90		ns
Turn-Off Fall Time	tf			9.2		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		IS			-30	A
Maximum Pulsed Drain to Source Diode Forward Current		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=-10A , 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

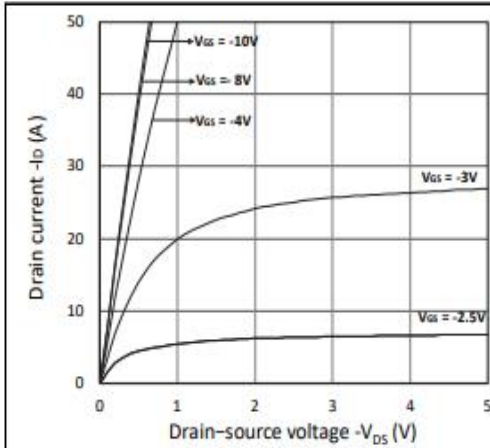


Figure 1. Output Characteristics

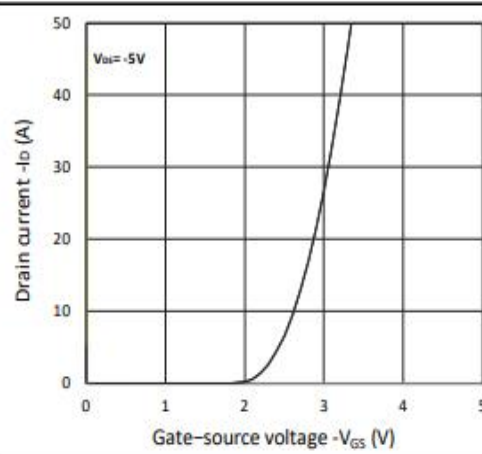


Figure 2. Transfer Characteristics

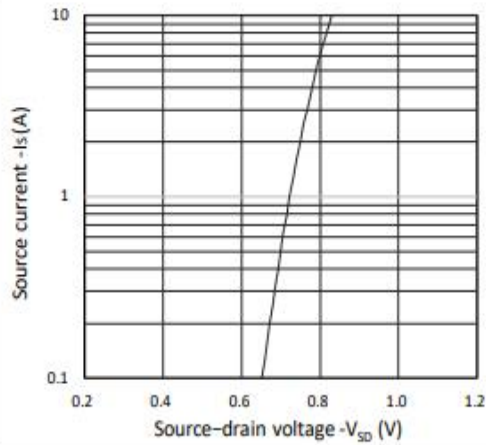
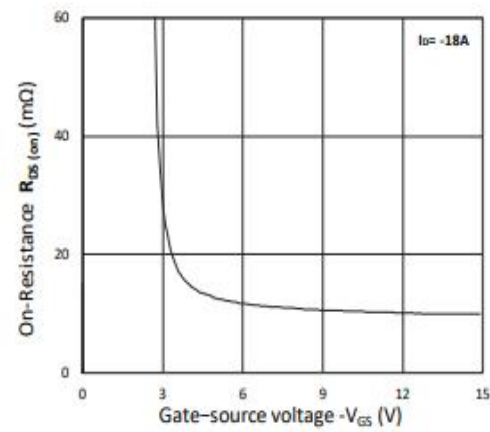
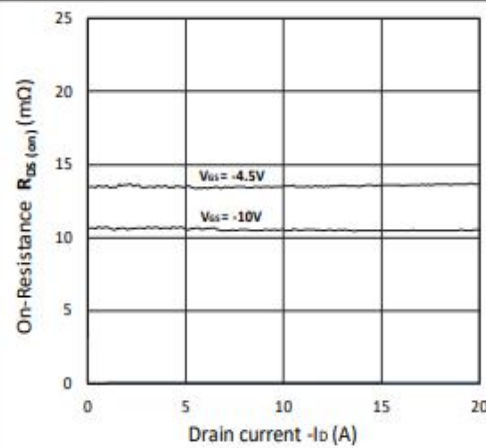
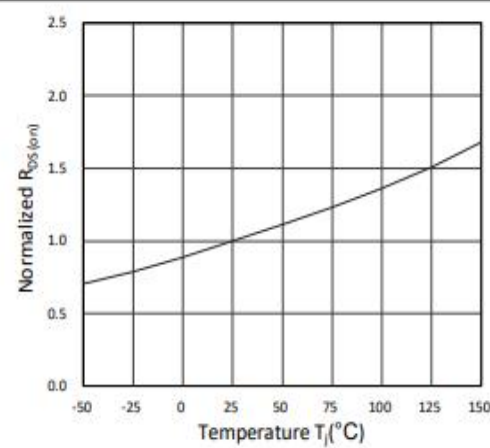


Figure 3. Forward Characteristics of Reverse


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

Figure 5. $R_{DS(ON)}$ vs. I_D

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

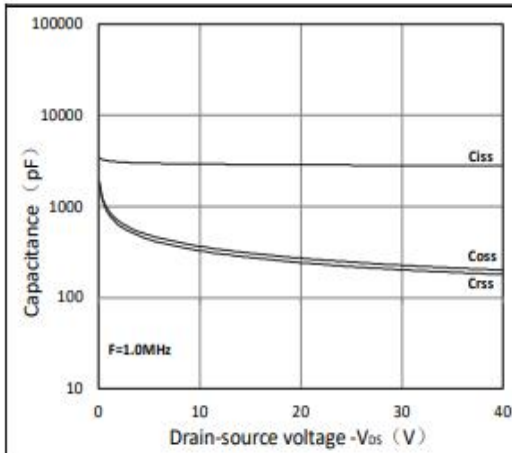


Figure 7. Capacitance Characteristics

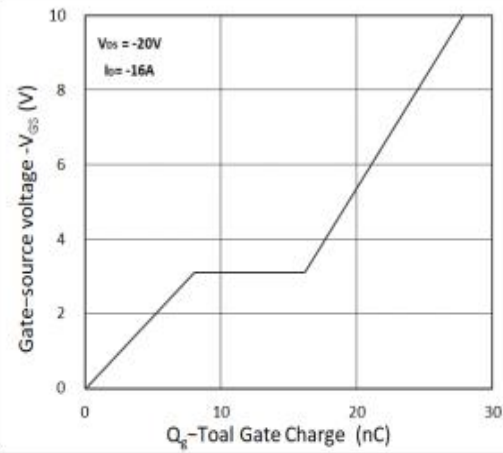


Figure 8. Gate Charge Characteristics

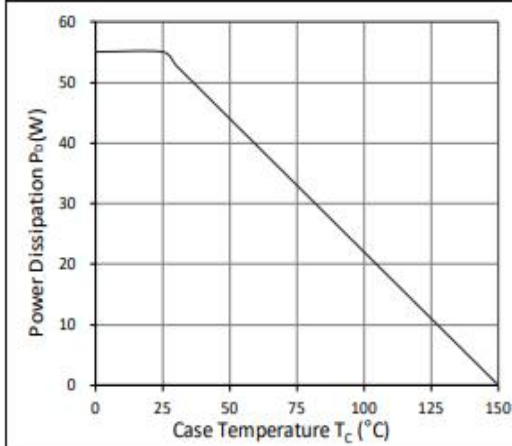


Figure 9. Power Dissipation

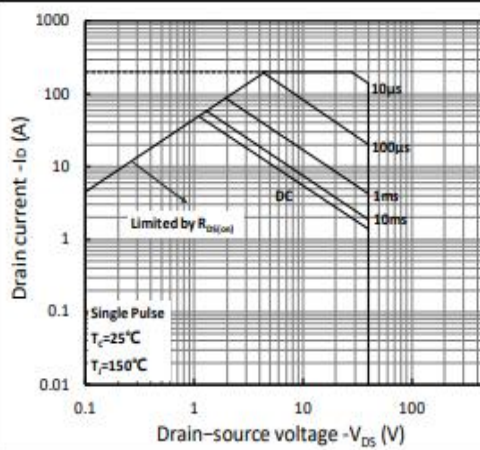


Figure 10. Safe Operating Area

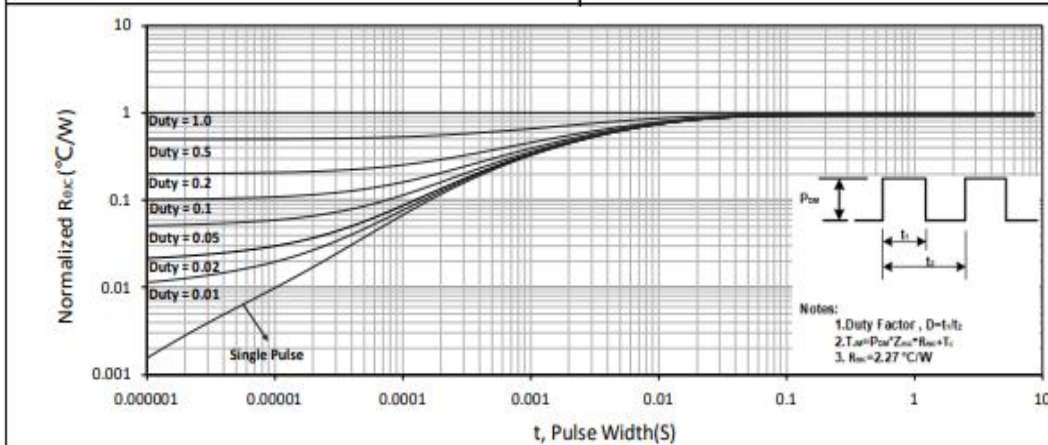
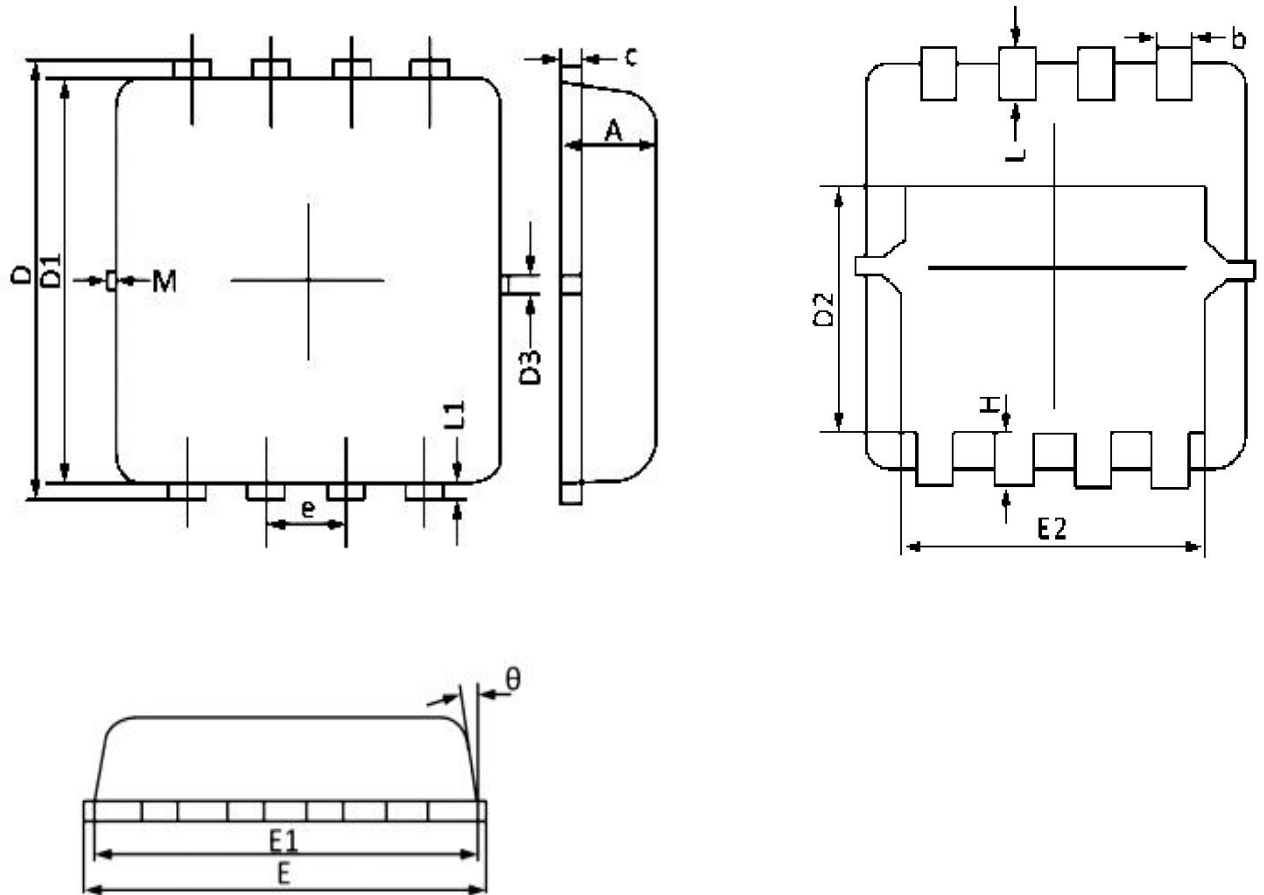


Figure 11. Normalized Maximum Transient Thermal Impedance

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