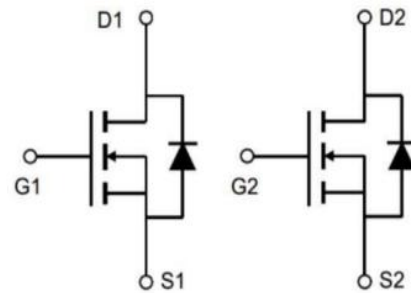
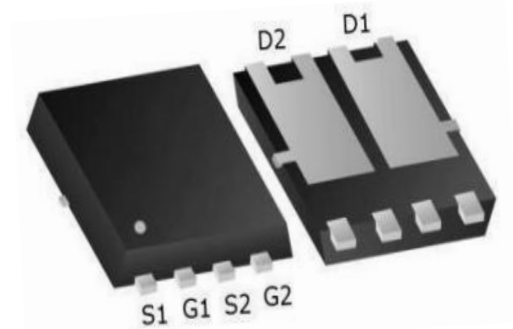


Features

The TW304CC 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 TW304CC meet the RoHS and Green and Green Product requirement, 100EAS guaranteed with fullfunction reliability approved.

Product Summary

V_{DS}	30V
I_D	20A
$R_{DS(ON)}$ (at $V_{GS} = 10V$)	< 20m Ω
$R_{DS(ON)}$ (at $V_{GS} = 4.5V$)	< 29m Ω



PDFN3X3

Maximum Ratings($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current, $V_{GS} @ 10V_1$	$I_{D@TC=25^\circ\text{C}}$	20	A
Continuous Drain Current, $V_{GS} @ 10V_1$	$I_{D@TC=100^\circ\text{C}}$	10	
Pulsed Drain Current ①	I_{DM}	40	
Single Pulse Avalanche Energy ³	EAS	12.1	mj
Avalanche Current	IAS	48	A
Power Dissipation ②	P_D	6	W
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$
Operating Junction	T_J	-55 to 150	$^\circ\text{C}$

Thermal Data

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-Case ¹	$R_{\theta JA}$		75	$^\circ\text{C/W}$

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	30			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 30V, V _{GS} =0V			1	μA
Gate-Body leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 250μA	1	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =5A		15	20	mΩ
		V _{GS} =4.5V, I _D =3A		21	29	mΩ
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1.0MHz		490		pF
Output Capacitance	C _{oss}			79		pF
Reverse Transfer Capacitance	C _{rss}			61		pF
Total Gate Charge	Q _g	V _{DS} =15V, I _D =5.8A, V _{GS} =10V		5.2		nC
Gate Source Charge	Q _{gs}			0.9		nC
Gate Drain Charge	Q _{gd}			1.3		nC
Switching Parameters						
Turn-On DelayTime	t _{d(on)}	V _{DS} =15V, I _D =3A, V _{GS} =10V, R _{REN} =3Ω		4.5		ns
Turn-On Rise Time	t _r			2.5		ns
Turn-Off DelayTime	t _{d(off)}			14.5		ns
Turn-Off Fall Time	t _f			3.5		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		I _S			12	A
Maximum Pulsed Drain to Source Diode Forward Current		I _{SM}			48	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =9A			1.2	V

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

Figure1: Output Characteristics

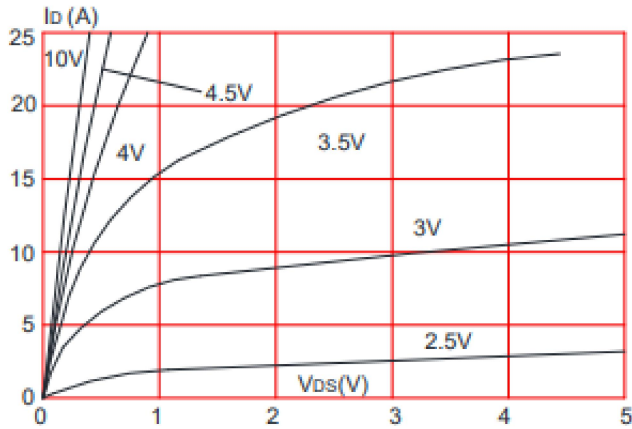


Figure 2: Typical Transfer Characteristics

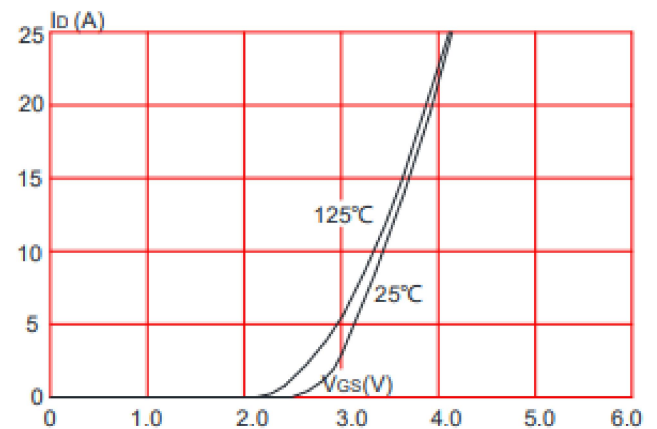


Figure 3: On-resistance vs. Drain Current

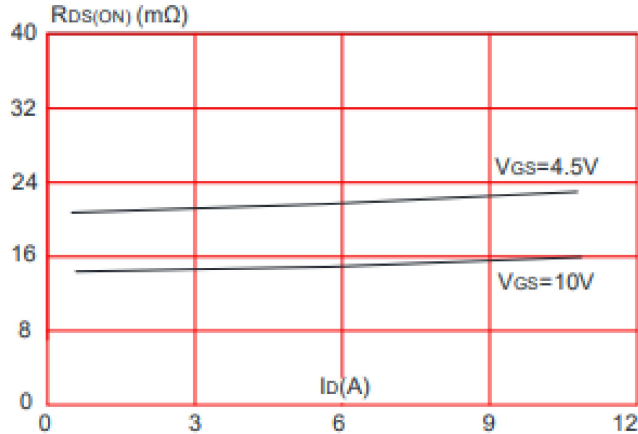


Figure 4: Body Diode Characteristics

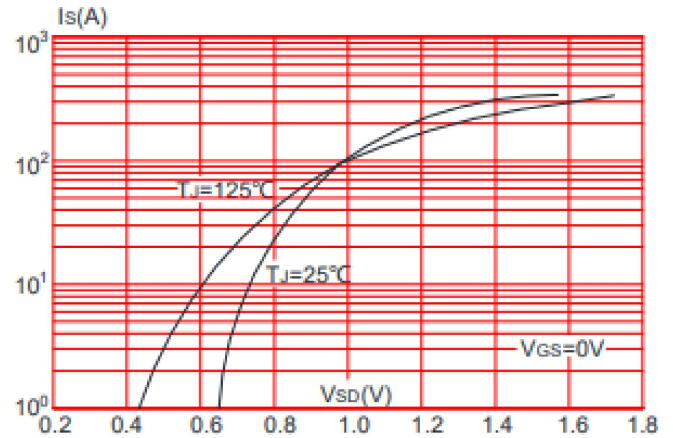


Figure 5: Gate Charge Characteristics

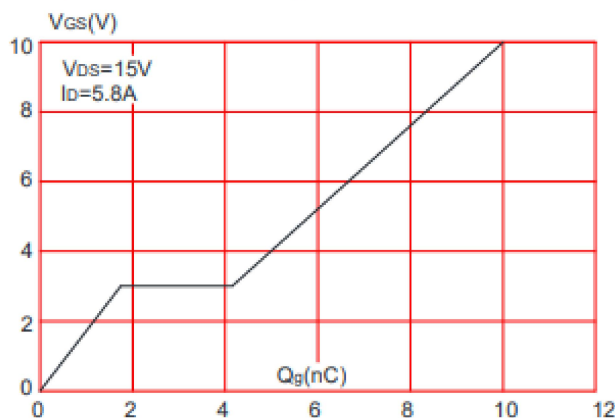
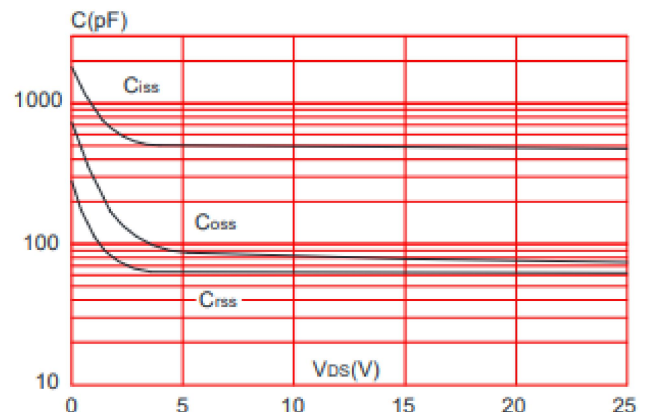


Figure 6: Capacitance Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

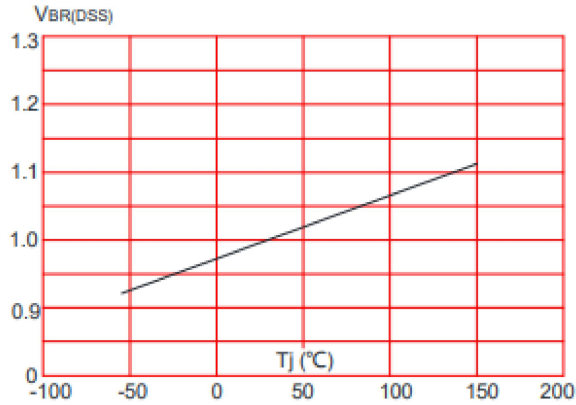


Figure 8: Normalized on Resistance vs. Junction Temperature

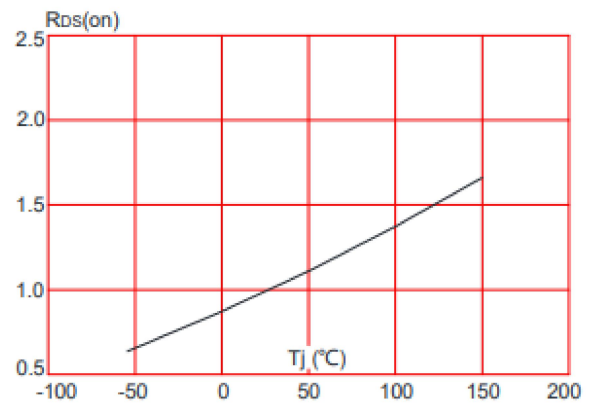


Figure 9: Maximum Safe Operating Area

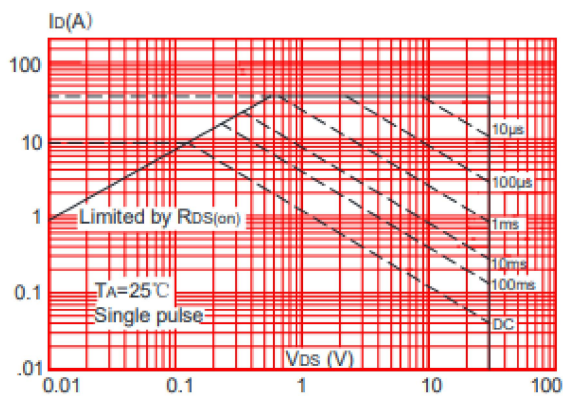


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

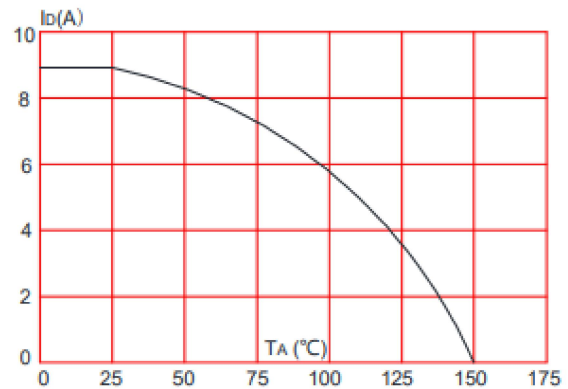
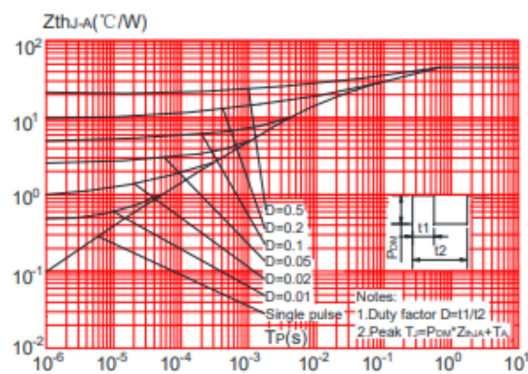
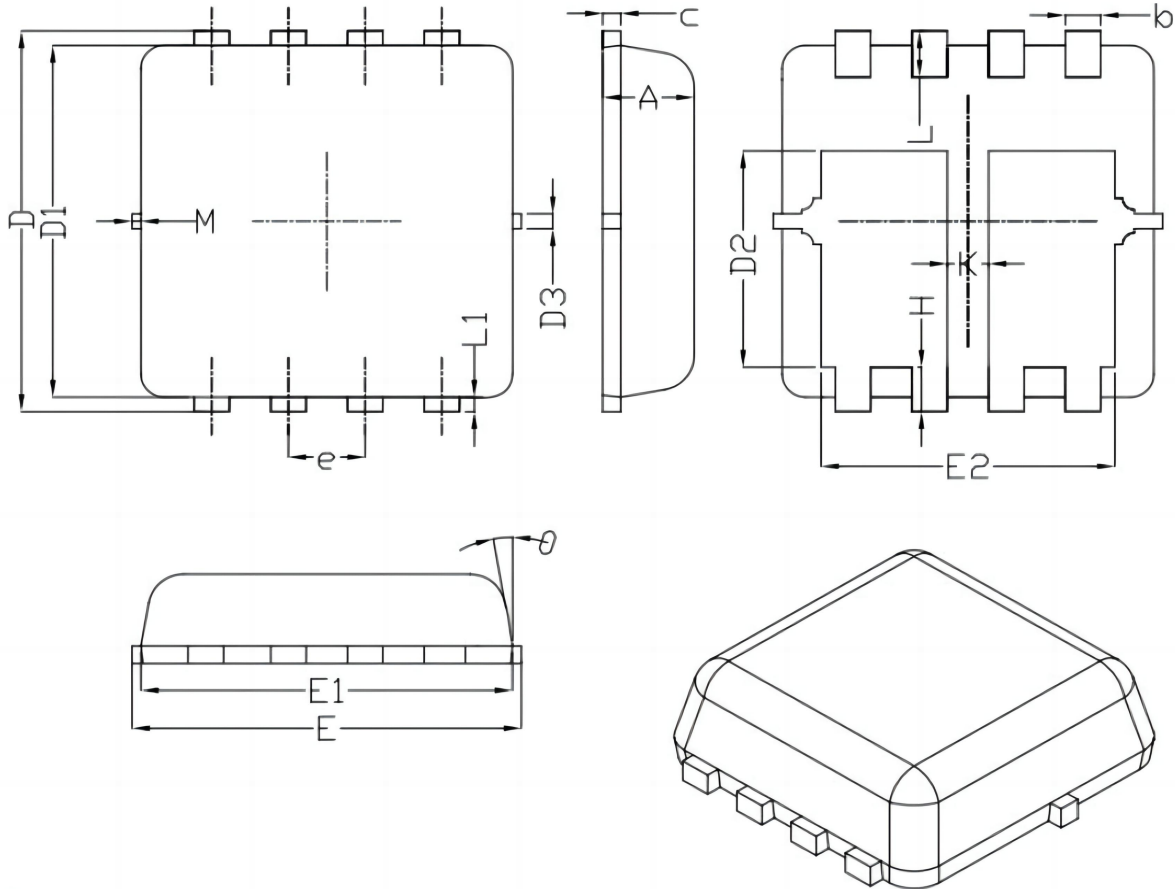


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



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
K	0.30	--	--				