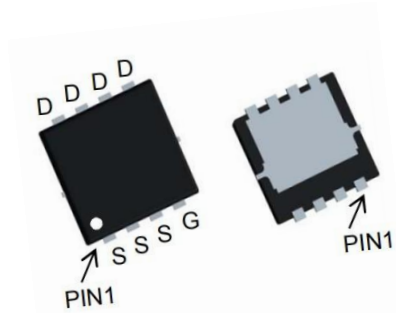


Features

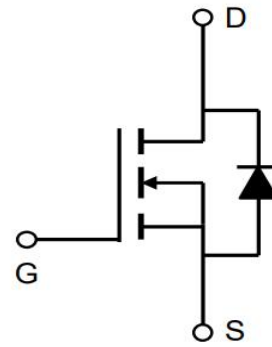
The TW40N06CC is the high cell density trench N- ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications. The TW40N06CC meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

V_{DS}	60V
I_D	40A
$R_{DS(ON)}$ (at $V_{GS} = 10V$)	< 12m Ω
$R_{DS(ON)}$ (at $V_{GS} = 4.5V$)	< 16m Ω



PDFN3X3



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

Parameter	Symbol	Value	Unit	
Drain-Source Voltage	V _{DS}	60	V	
Gate-Source Voltage	V _{GS}	±20		
Continuous Drain Current, V _{GS} @ 10V ¹	I _{D@TC =25℃}	40	A	
Continuous Drain Current, V _{GS} @ 10V ¹	I _{D@TC=100℃}	23		
Pulsed Drain Current ①	I _{DM}	100		
Single Pulse Avalanche Energy ³	E _{AS}	48	mj	
Power Dissipation ②	P _D	37.7	W	
Storage Temperature	T _{STG}	-55~+150	℃	
Operating Junction	T _J	-55~+150	℃	
Thermal Data				
Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-Case ¹	R _{θJC}		1.6	℃/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	BV _{DSS}	V _{GS} = 0V, I _D = 250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V , V _{GS} =0V			1	μA
Gate-Body leakage Current	I _{GSS}	V _{GS} =±20V , V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 250μA	1.0	1.6	2.59	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V , I _D =30A		12	17	mΩ
		V _{GS} =4.5V , I _D =20A		15	16	mΩ
Dynamic Parameters ④						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		2900		pF
Output Capacitance	C _{oss}			140		pF
Reverse Transfer Capacitance	C _{rss}			120		pF
Total Gate Charge	Q _g	V _{DS} =30V, I _D =30A, V _{GS} =10V		50		nC
Gate Source Charge	Q _{gs}			6		nC
Gate Drain Charge	Q _{gd}			15		nC
Switching Parameters ④						
Turn-On DelayTime	t _{d(on)}	V _{DS} =30V, I _D =30A, R _G =1.8Ω, V _{GS} =10V		7.4		ns
Turn-On Rise Time	t _r			5.1		ns
Turn-Off DelayTime	t _{d(off)}			28.2		ns
Turn-Off Fall Time	t _f			5.5		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		I _S			40	A
Maximum Pulsed Drain to Source Diode Forward Current		I _{SM}			100	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =30A			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

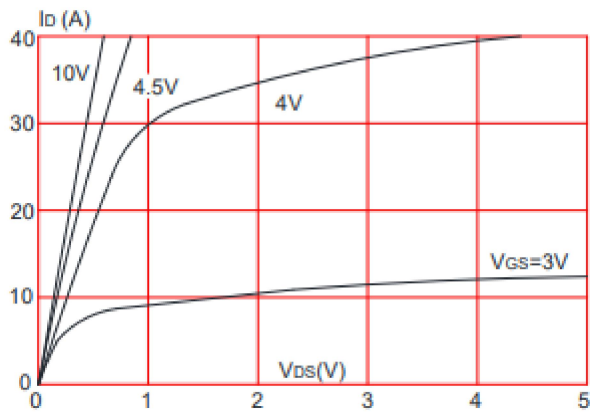


Figure 2: Typical Transfer Characteristics

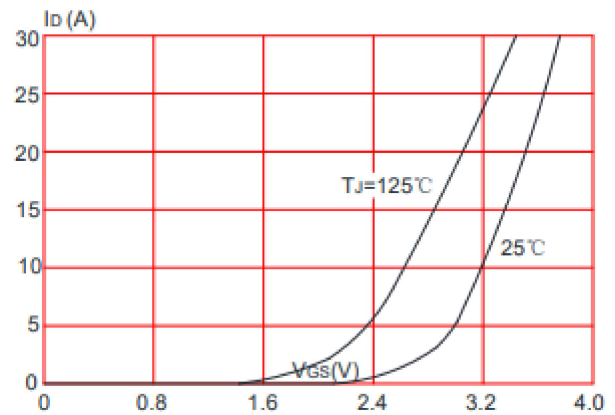


Figure 3: On-resistance vs. Drain Current

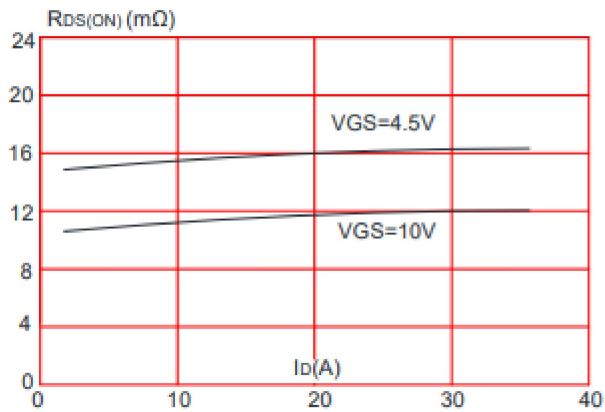


Figure 4: Body Diode Characteristics

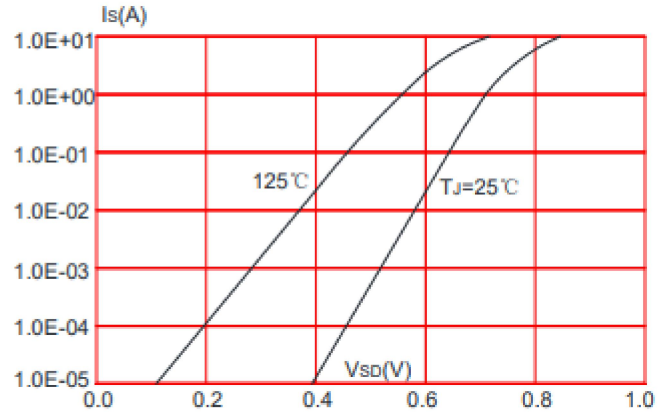


Figure 5: Gate Charge Characteristics

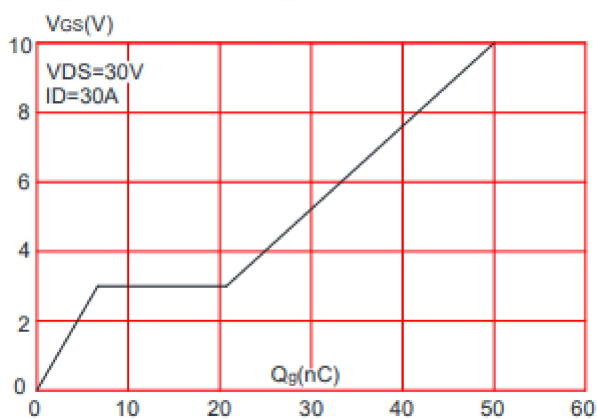


Figure 6: Capacitance Characteristics

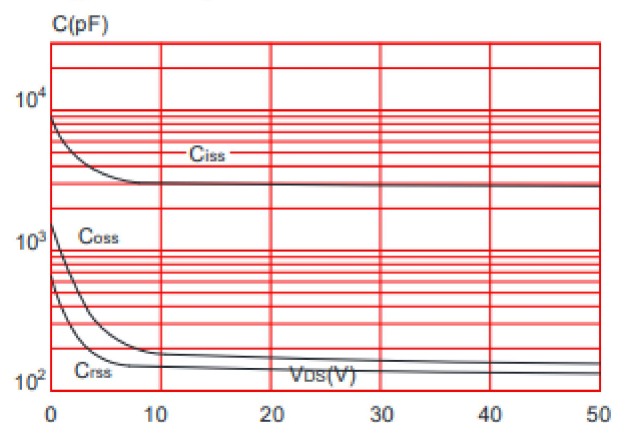


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

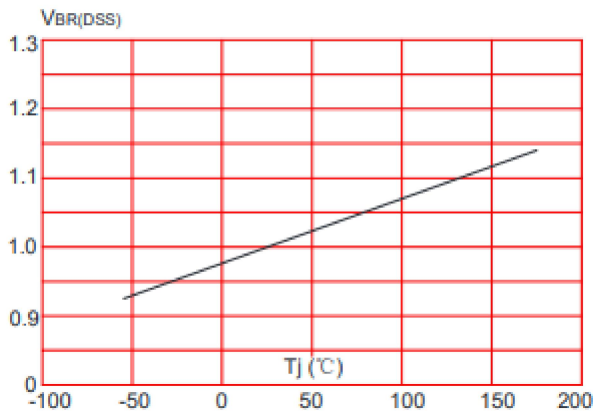


Figure 8: Normalized on Resistance vs. Junction Temperature

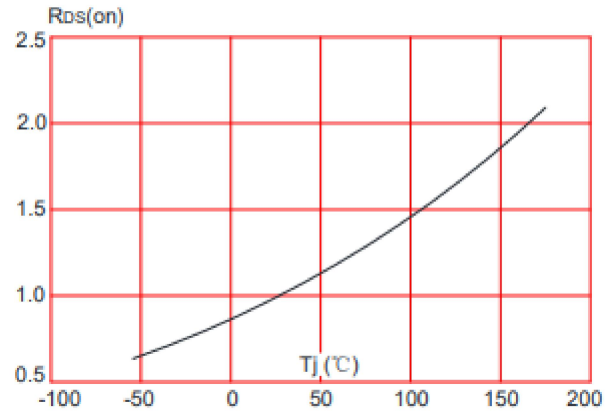


Figure 9: Maximum Safe Operating Area

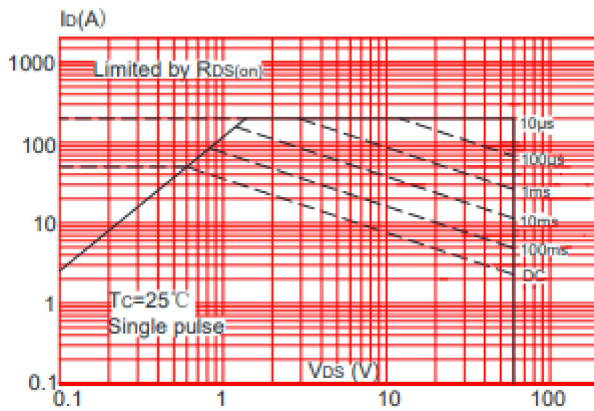


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

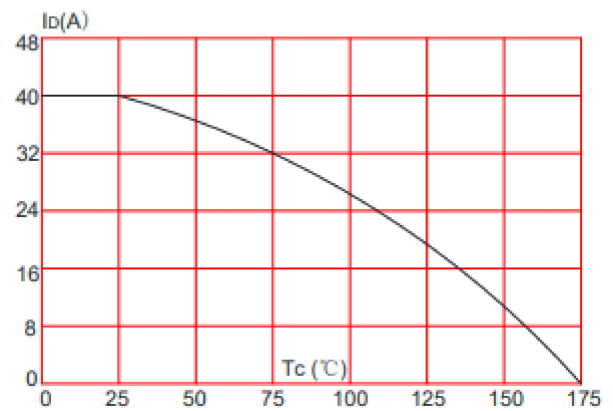
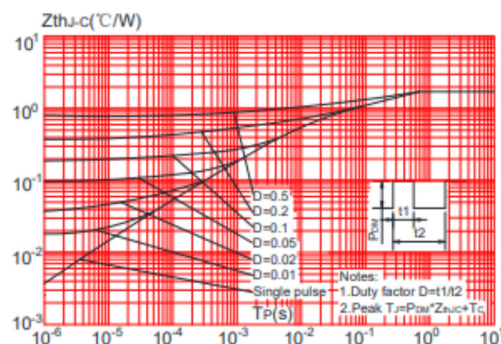
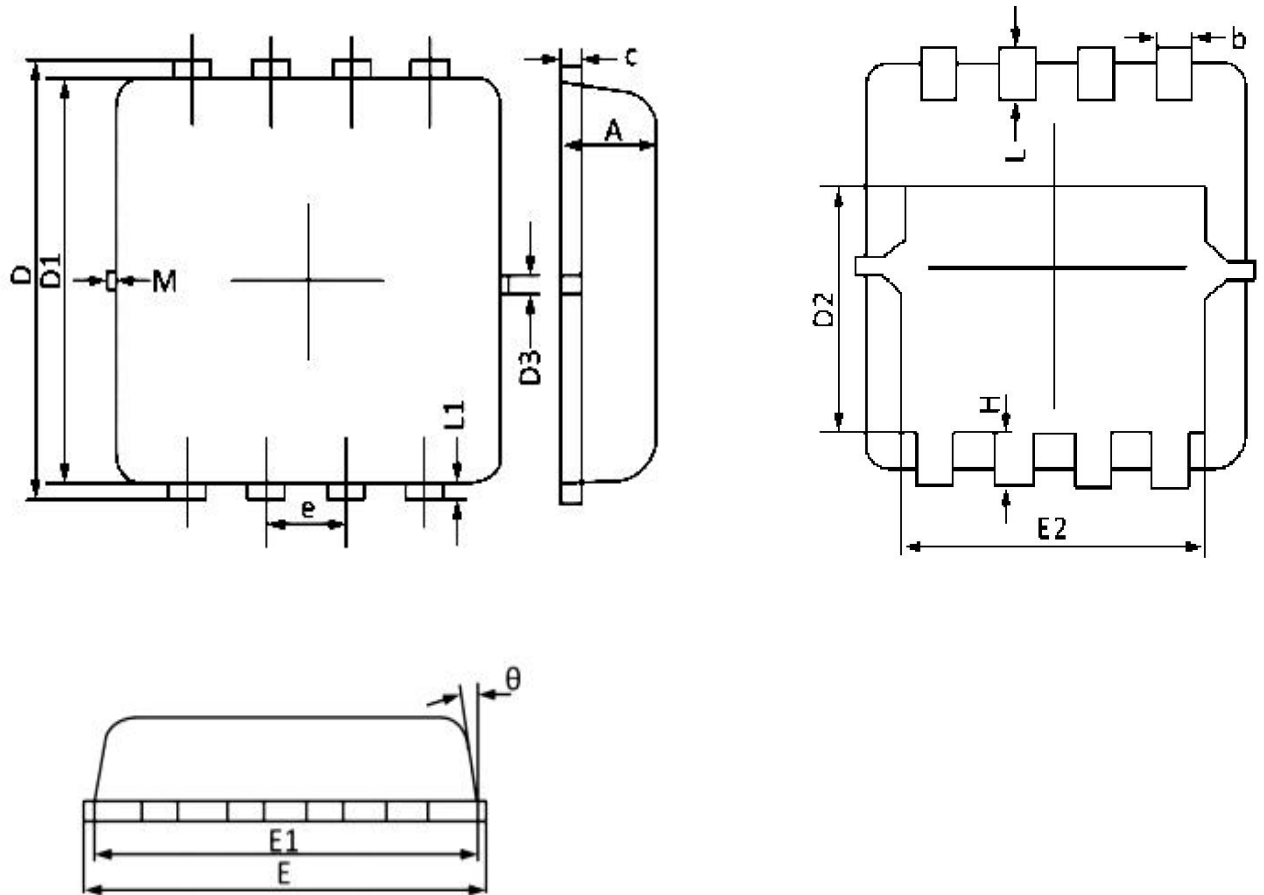


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



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