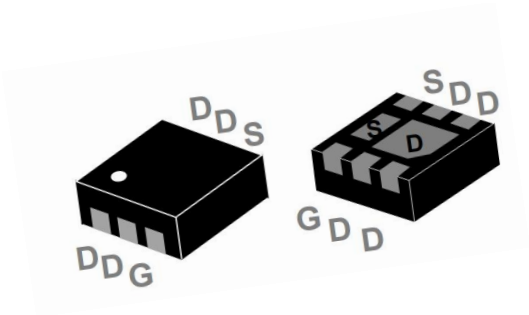
Features

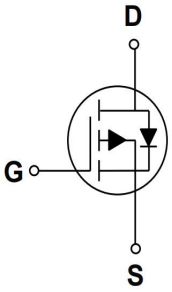
The TW30P10 is the high cell density trenched P-ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications. The TW30P10 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

BVDSS	RDSON	ID
-30V	19mΩ	-10A



DFN2X2-6L



Maximum Ratings(Ta=25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	-30	V
Gate-Source Voltage	VGS	±20	
Continuous Drain Current, VGS @ -10V	ID@TC =25℃	-10	A
Continuous Drain Current, VGS @ -10V	ID@TC=100℃	-8	
Pulsed Drain Current ①	IDM	-36	
Single Pulse Avalanche Energy	EAS	25	mJ
Avalanche Current	IAS	-8	A
Total Power Dissipation	PD@TC=25℃	5.0	W
Total Power Dissipation	PD@TA =20℃	1.67	W
StorageTemperature Range	TSTG	-55 to 150	℃
Operating Junction Temperature	TJ	-55 to 150	℃
Thermal Data			
Parameter	Symbol	Max.	Unit
Thermal Resistance Junction-Ambie	RθJA	30	℃/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	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	VDS=-24V , VGS=0V			-1	μA
Gate-Body leakage Current	I_{GSS}	VGS=±25V , VDS=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	VGS=VDS , ID=-250uA	-1.0		-2.5	V
Static Drain-Source On-Resistance	RDS(on)	VGS =- 10V, ID = -15A		19	24	mΩ
		VGS =- 4.5V, ID = -10A		25	35	mΩ
Dynamic Parameters ④						
Input Capacitance	C_{iss}	VDS=-15V , VGS=0V , f=1MHz		1150		pF
Output Capacitance	C_{oss}			155		pF
Reverse Transfer Capacitance	C_{rss}			139		pF
Total Gate Charge	Q_g	VDS=-15V , VGS=-4.5V ID=-15A		48		nC
Gate Source Charge	Q_{gs}			9.5		nC
Gate Drain Charge	Q_{gd}			8.0		nC
Switching Parameters ④						
Turn-On DelayTime	$t_{d(on)}$	VDD=-15V , VGS=-10V , RG=3.3Ω, ID=-15A		12		ns
Turn-On Rise Time	tr			14		ns
Turn-Off DelayTime	$t_{d(off)}$			190		ns
Turn-Off Fall Time	tf			90		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		IS			-10	A
Maximum Pulsed Drain to Source Diode Forward Current		ISM			-36	A
Drain to Source Diode Forward Voltage	VSD	VGS=0V , IS=-1A , TJ=25℃			-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

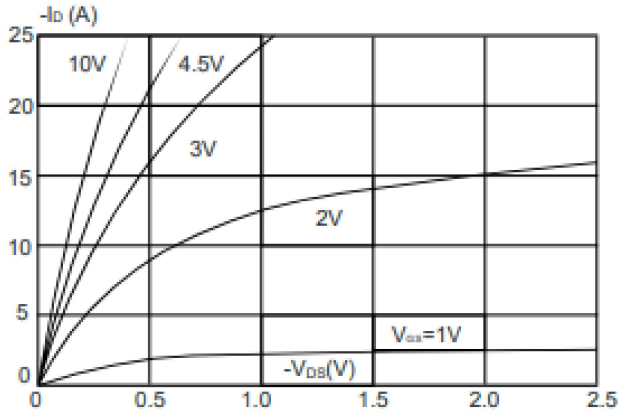


Figure 2: Typical Transfer Characteristics

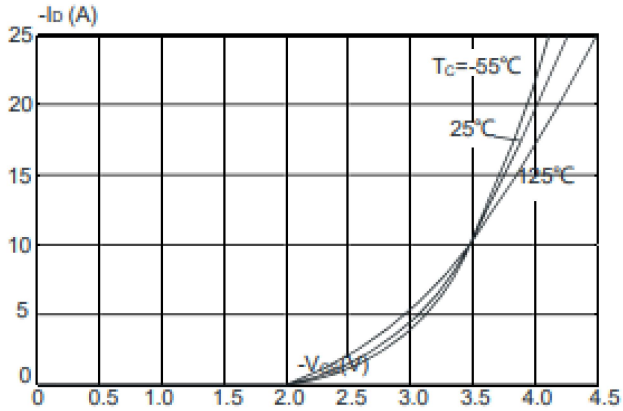


Figure 3: On-resistance vs. Drain Current

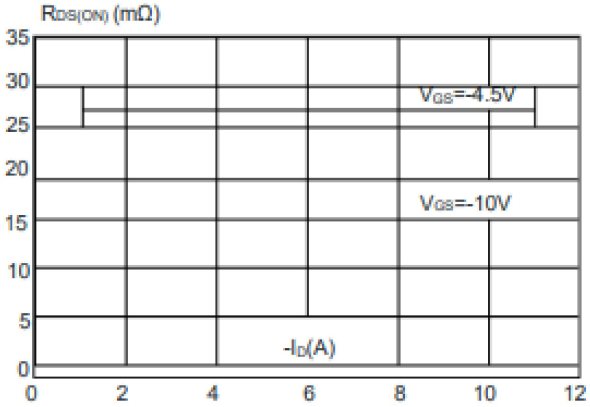


Figure 4 : Body Diode Characteristics

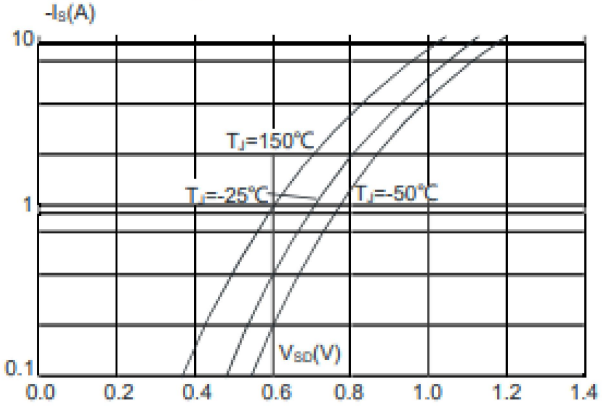


Figure 5: Gate Charge Characteristics

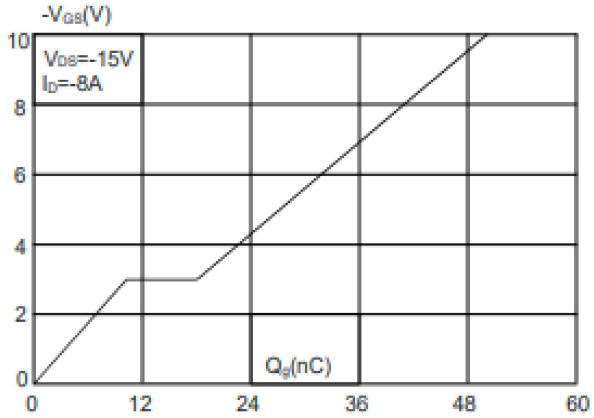
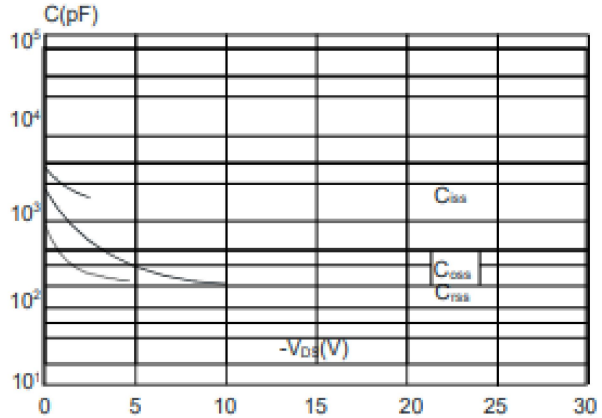


Figure 6: Capacitance Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

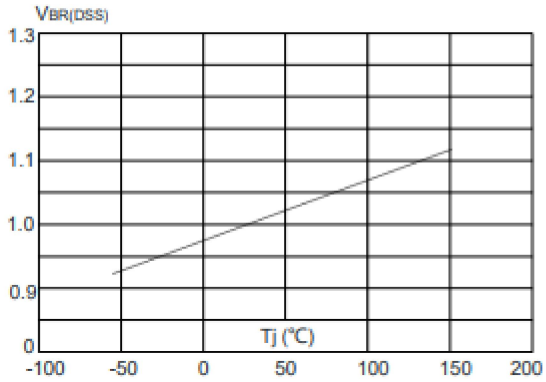


Figure 8: Normalized on Resistance vs. Junction Temperature

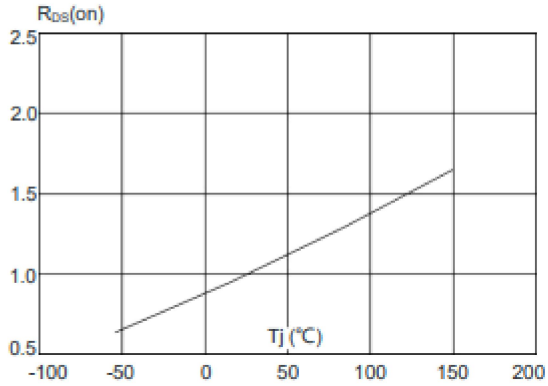


Figure 9: Maximum Safe Operating Area

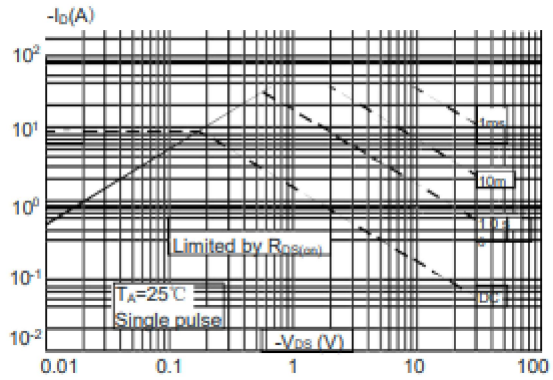


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

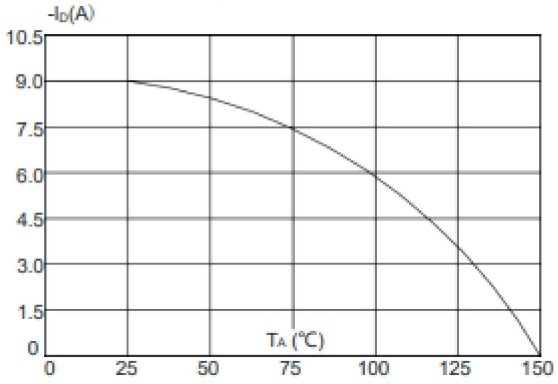
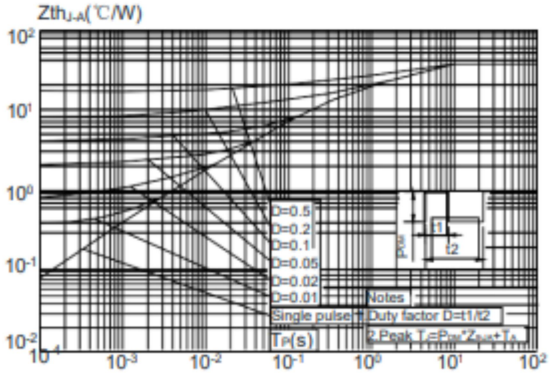
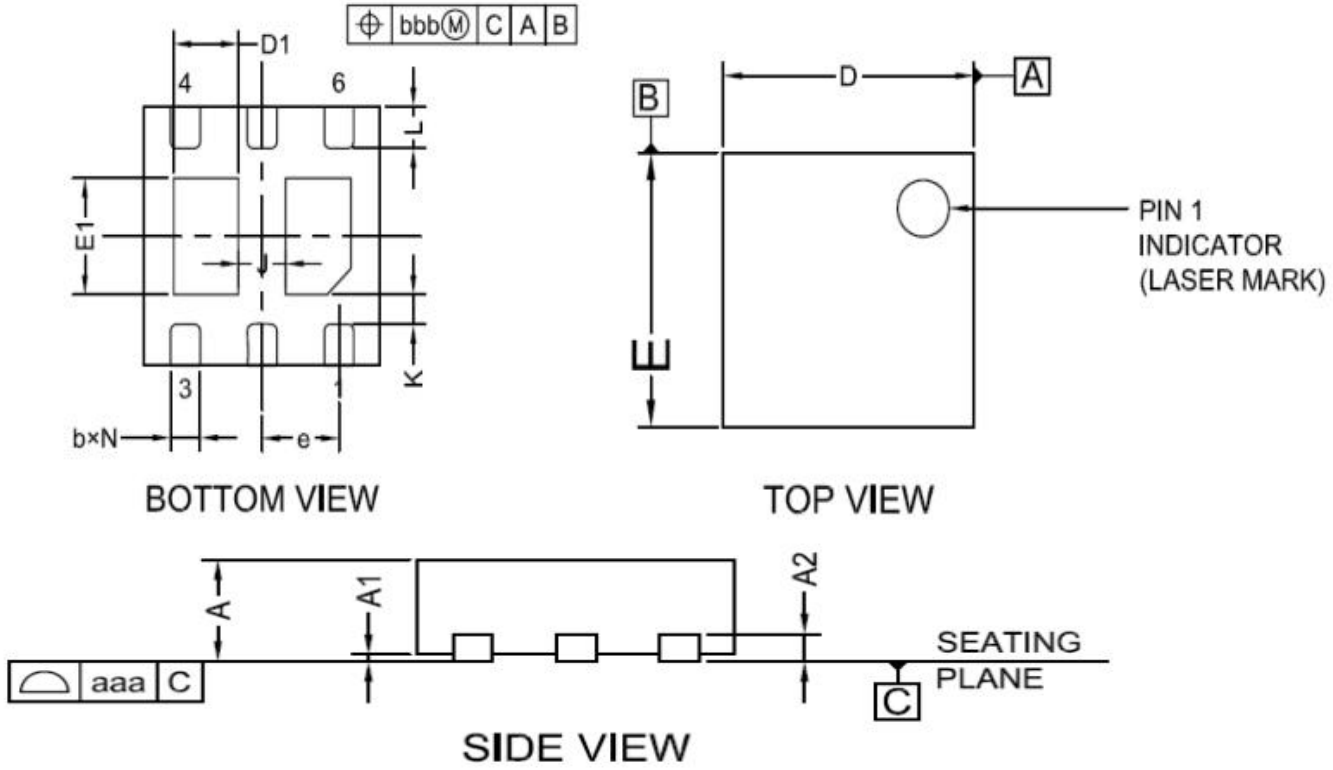


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



DFN2X2-6L Package Outline Dimesions



COMMON DIMENSIONS

(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.7	0.75	0.80
A1	0.00	0.02	0.05
A2		0.203	
b	0.20	0.25	0.30
D	1.95	2	2.05
D1	0.50	0.55	0.60
E	1.95	2	2.05
E1	0.85	0.9	0.95
e		0.65BSC	
L	0.27	0.32	0.37
J		0.40BSC	
K		0.20MIN	
N		6	
aaa		0.08	
bbb		0.10	