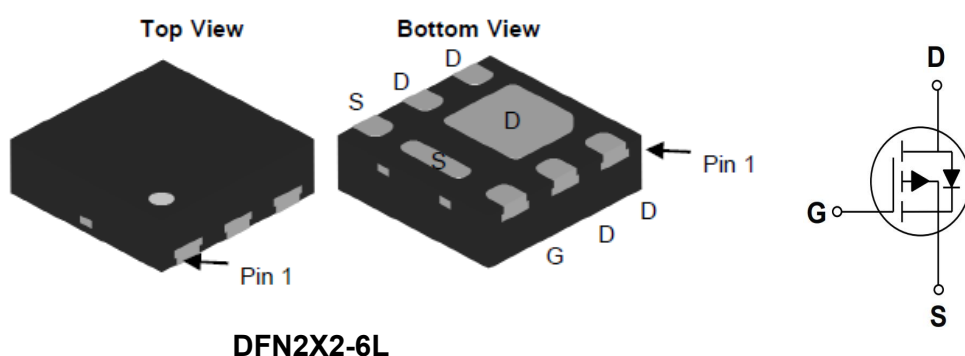


Features

The TW30P20 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 TW30P20 meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

BVDSS	RDSON	ID
-30V	13mΩ	-20A



Maximum Ratings(Ta=25°C 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°C	-20	A
Continuous Drain Current, VGS @ -10V	ID@TC=100°C	-16	
Pulsed Drain Current ①	IDM	-100	
Single Pulse Avalanche Energy	EAS	45	mJ
Avalanche Current	IAS	-20	A
Total Power Dissipation	PD@TC=25°C	9.0	W
Total Power Dissipation	PD@TA =20°C	4.2	W
Storage Temperature Range	TSTG	-55 to 150	°C
Operating Junction Temperature	TJ	-55 to 150	°C

Thermal Data

Parameter	Symbol	Max.	Unit
Thermal Resistance Junction-Ambie	RθJA	68	°C/W

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

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BVDSS	VGS = 0V, ID = -250μA	-30			V
Zero Gate Voltage Drain Current	IDSS	VDS=-30V , VGS=0V			-1	μA
Gate-Body leakage Current	IGSS	VGS=±20V , 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		13	16	mΩ
		VGS =- 4.5V, ID = -5A		18	27	mΩ
Dynamic Parameters						
Input Capacitance	Ciss	VDS=-15V , VGS=0V , f=1MHz		1330		pF
Output Capacitance	Coss			183		pF
Reverse Transfer Capacitance	Crss			156		pF
Total Gate Charge	Qg	VDS= -15V, VGS=0V, f=1.0MHz		22		nC
Gate Source Charge	Qgs			1.0		nC
Gate Drain Charge	Qgd			1.8		nC
Switching Parameters						
Turn-On DelayTime	td(on)	VDD= -15V, ID= -10A, VGS=-10V, RGEN=2		9		ns
Turn-On Rise Time	tr			13		ns
Turn-Off DelayTime	td(off)			48		ns
Turn-Off Fall Time	tf			20		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		IS			-20	A
Maximum Pulsed Drain to Source Diode Forward Current		ISM		-0.8	-80	A
Drain to Source Diode Forward Voltage	VSD	VGS=0V , IS=-1A , TJ=25℃			-1.2	V
Reverse Recovery Time	trr	TJ=25℃, VDD= -24V,IF=-2.8A, dl/dt=-100A		64		ns
Reverse Recovery Charge	Qrr			25		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

Figure1: Output Characteristics

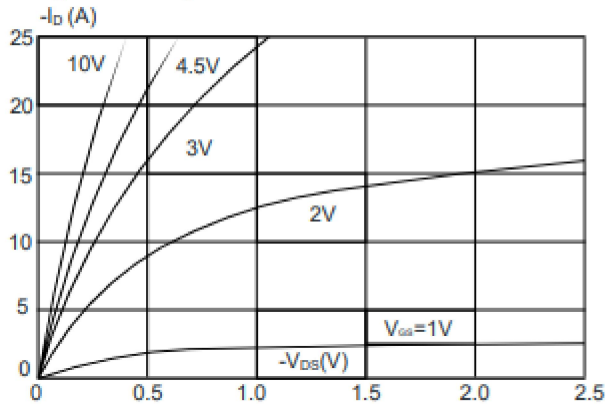


Figure 2: Typical Transfer Characteristics

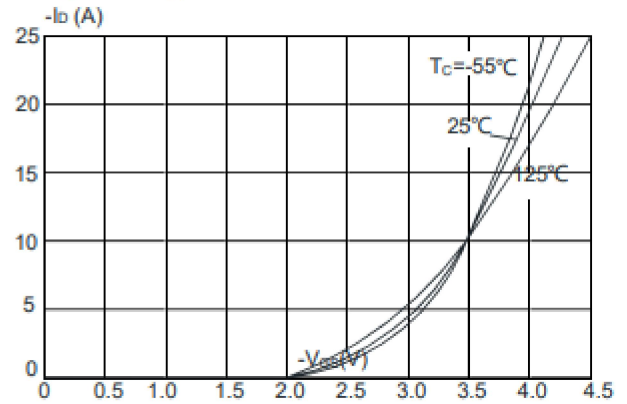


Figure 3: On-resistance vs. Drain Current

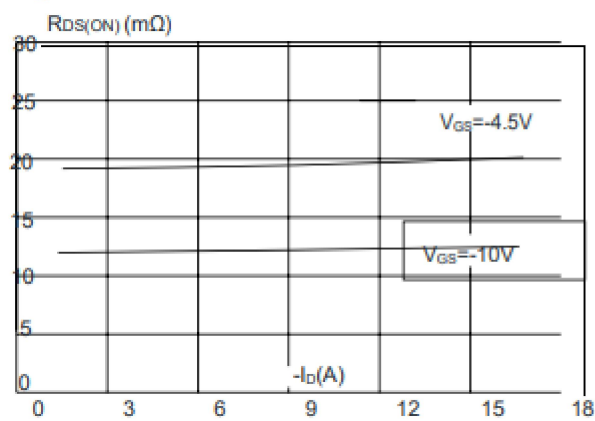


Figure 4 : Body Diode Characteristics

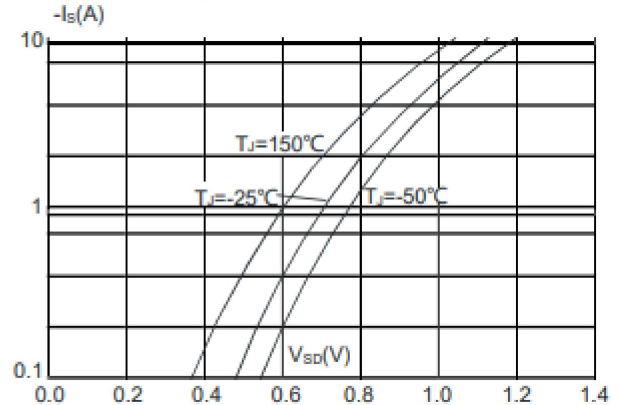


Figure 5: Gate Charge Characteristics

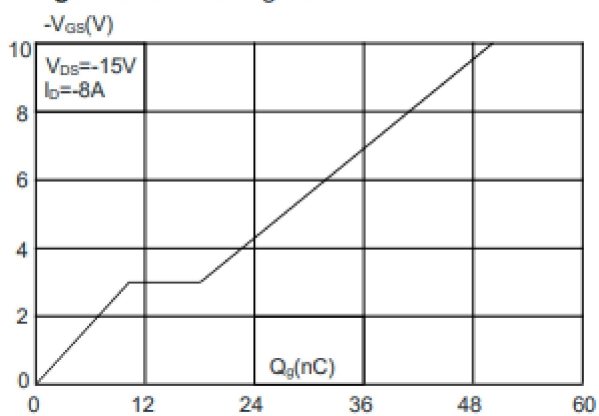
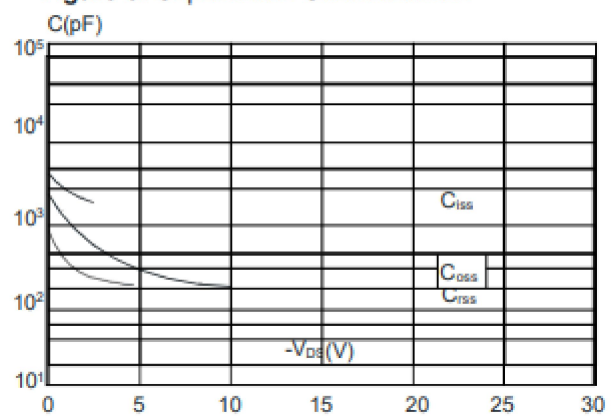


Figure 6: Capacitance Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

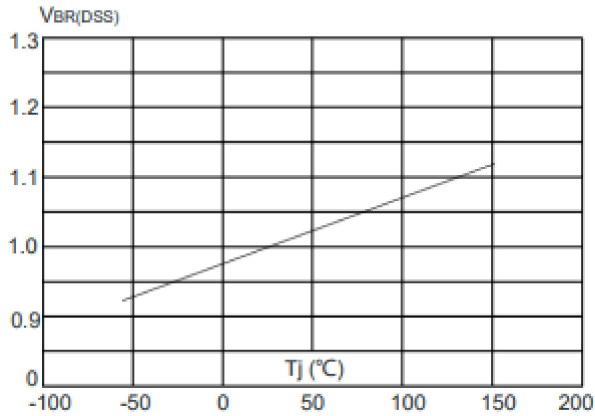


Figure 8: Normalized on Resistance vs. Junction Temperature

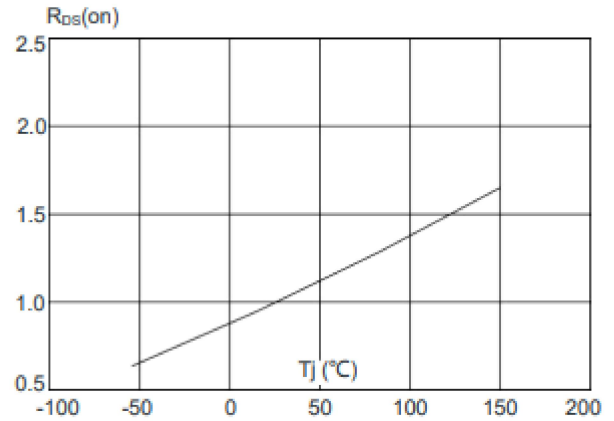


Figure 9: Maximum Safe Operating Area

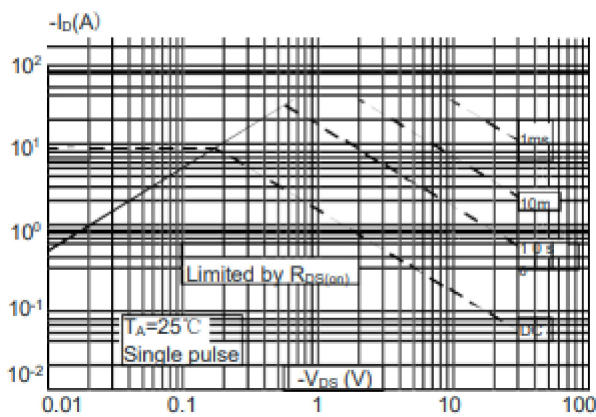


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

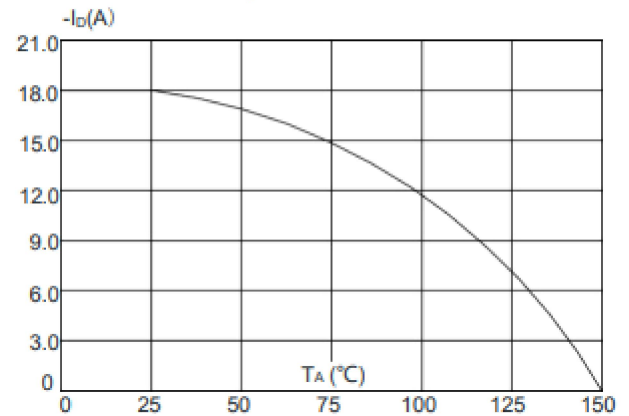
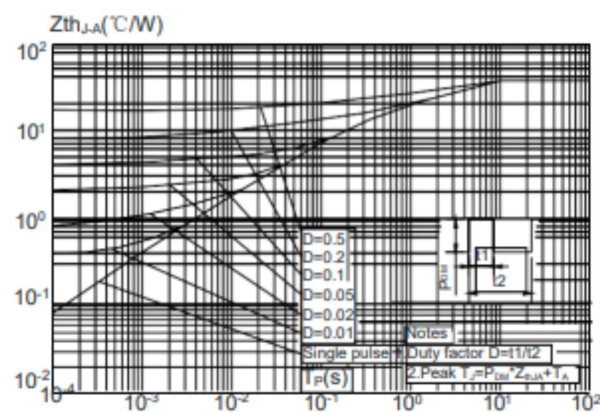
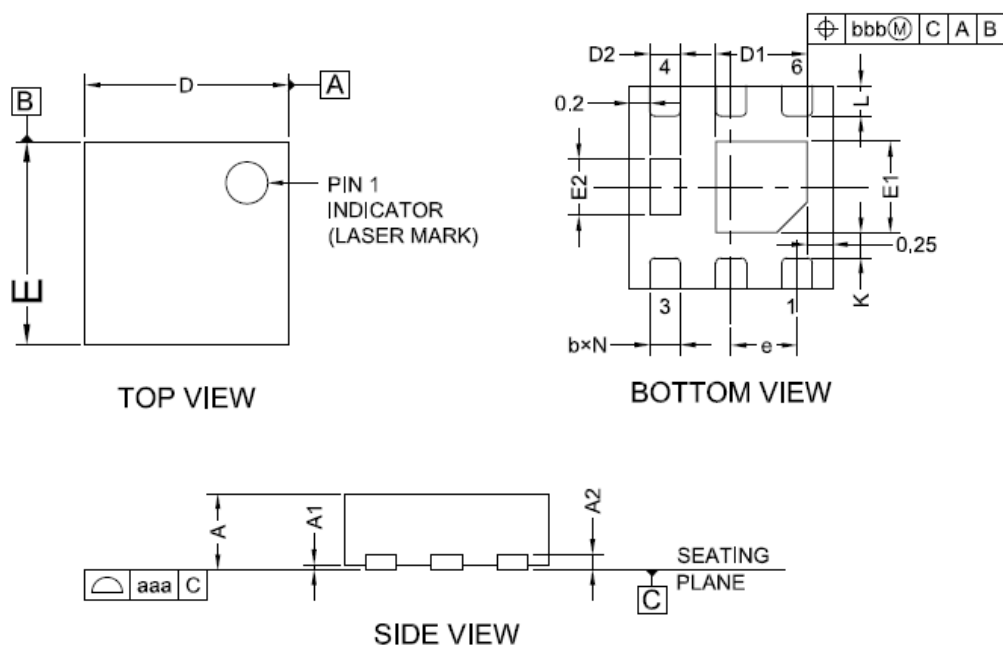


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Physical Dimensions

DFN2X2-6 Package Out Line B



NOTES:

- 1.CONTROLLING DIMENSIONS ARE IN MILLIMETERS(ANGLES IN DEGREES).
2. COPLANARITY APPLIES TO THE EXPOSED PAD AS THE TERMINALS.