

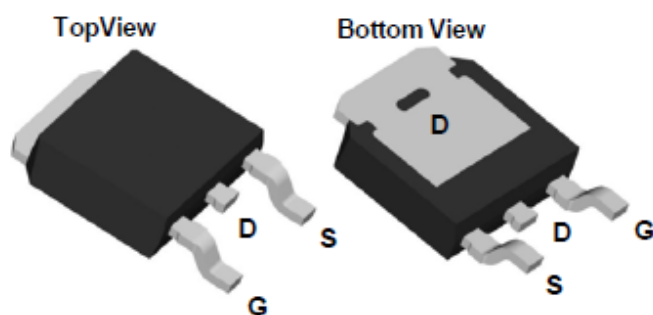
Features

The TW30N06D is the high cell density trench N ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

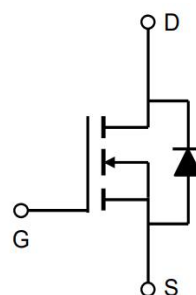
The TW30N06D meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

BVDSS	RDSON	ID
60V	23mΩ	30A



TO-252



Maximum Ratings(Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±30	
Continuous Drain Current	I _D @TC=25°C	30	A
Continuous Drain Current	I _D @TC=100°C	13	
Pulsed Drain Current ①	I _{DM}	100	
Single Pulse Avalanche Energy	EAS	39	mJ
Power Dissipation ②	P _D	41.7	W
Thermal Resistance Junction-Case	R _{θJC}	50	°C/W
Operating Junction	T _J	-55~+150	°C
Storage Temperature	T _{STG}	-55~+150	°C

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	60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 250μA	1.2	1.7	2.5	V
Gate-Body leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 60V, V _{GS} =0V			1	μA
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D = 10A		23	32	mΩ
	R _{DS(on)}	V _{GS} = 4.5V, I _D = 5A		31.5	40	mΩ
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} = 30V, V _{GS} =0V, f =1MHz		1355		pF
Output Capacitance	C _{oss}			60		pF
Reverse Transfer Capacitance	C _{rss}			49		pF
Total Gate Charge	Q _g	V _{GS} = 10V, V _{DD} = 30V, I _D = 10A		22		nC
Gate Source Charge	Q _{gs}			4.2		nC
Gate Drain Charge	Q _{gd}			6.9		nC
Switching Parameters						
Turn-On DelayTime	t _{d(on)}	V _{DS} =10V, I _D =30A, R _G =3Ω, V _{GS} =10V		6.4		ns
Turn-On Rise Time	t _r			15.3		ns
Turn-Off DelayTime	t _{d(off)}			25		ns
Turn-Off Fall Time	t _f			7.6		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		I _s			30	A
Drain to Source Diode Forward Voltage	V _{SD}	I _S = 10A, V _{GS} = 0V			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

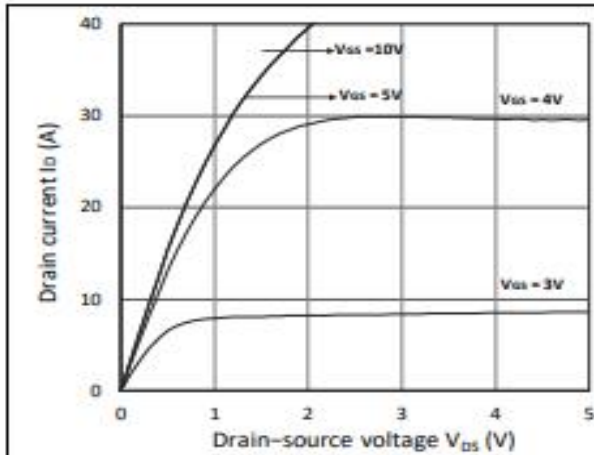


Figure 1. Output Characteristics

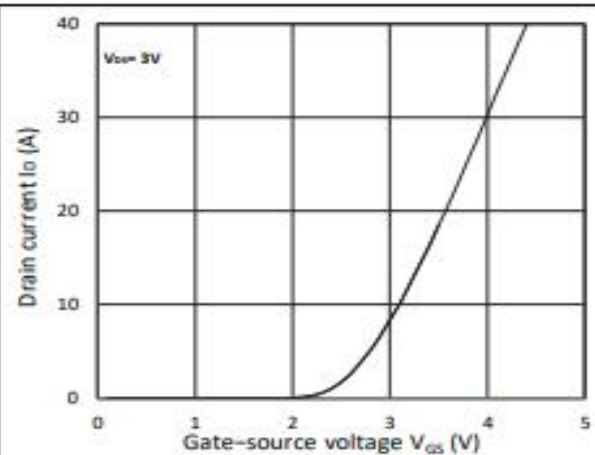


Figure 2. Transfer Characteristics

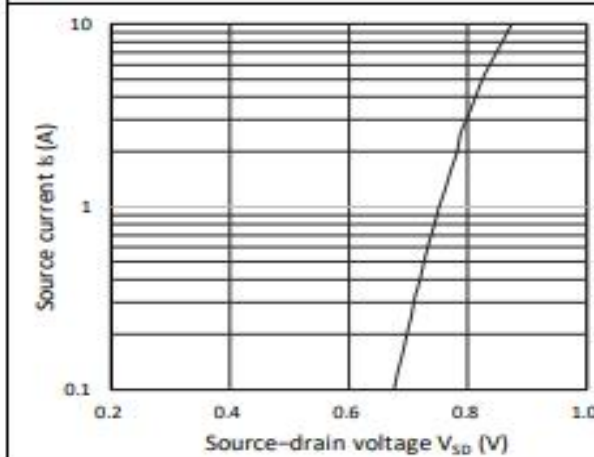
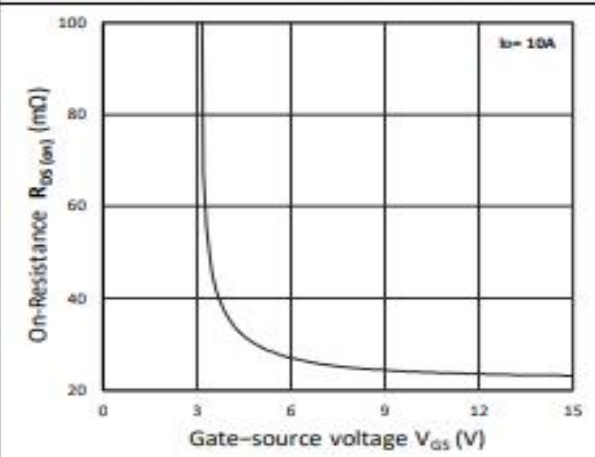
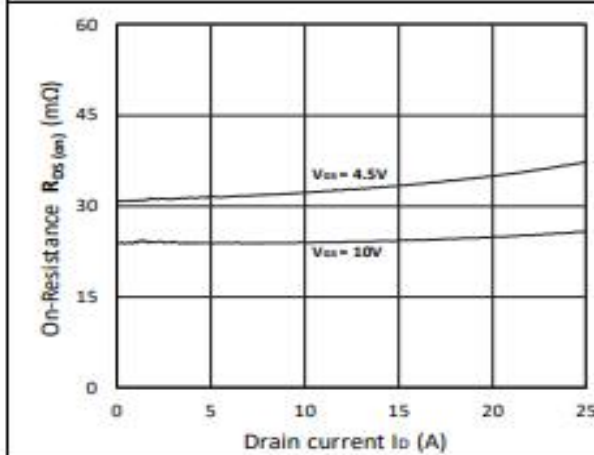
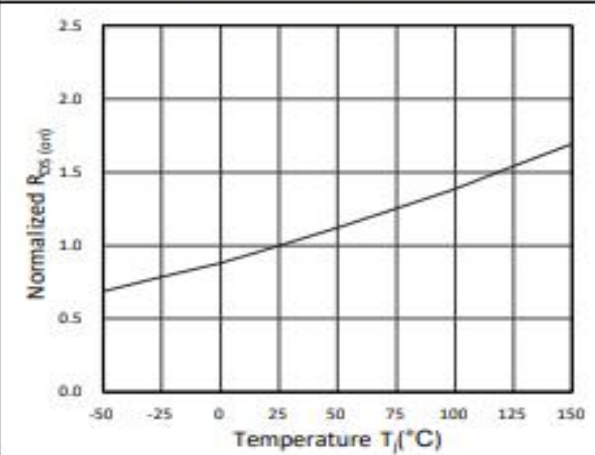
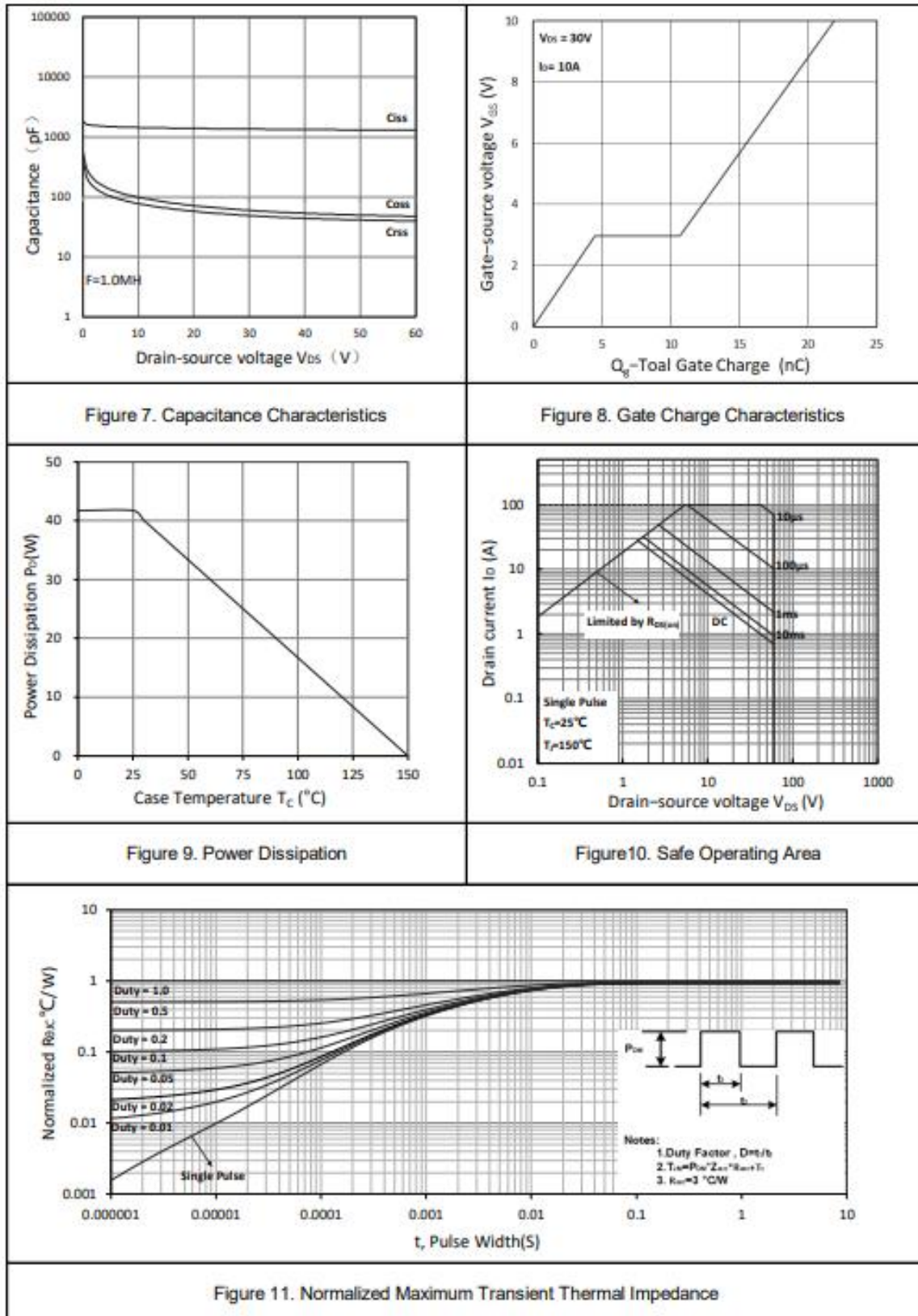


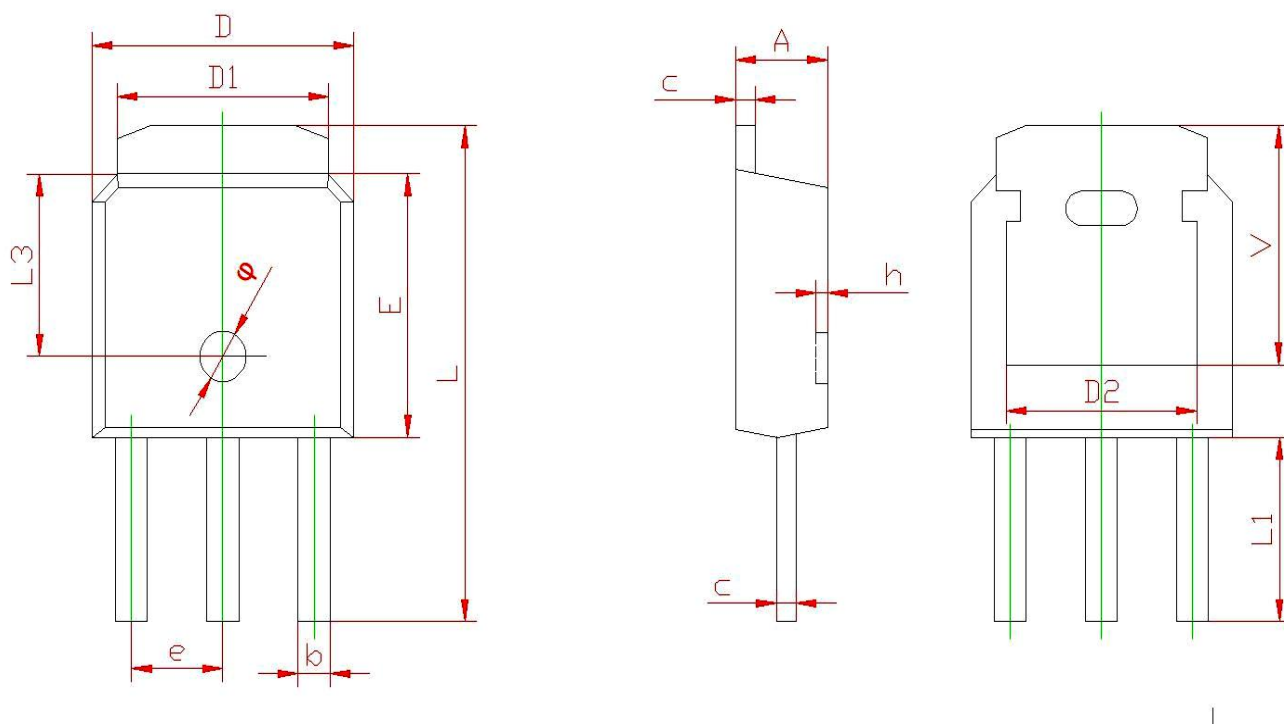
Figure 3. Forward Characteristics of Reverse


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

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

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

Typical Electrical and Thermal Characteristics



TO-252 Package Outline Dimesions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.800 REF		0.189 REF	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	11.200	11.800	0.440	0.465
L1	4.300 REF		0.170 REF	
L3	4.000REF		0.157 REF	
Φ	1.100	1.300	0.043	0.051
h	0.000	0.300	0.000	0.012
V	5.5000REF		0.217 REF	