

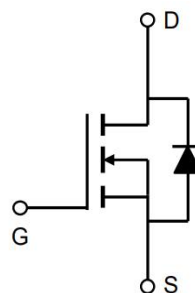
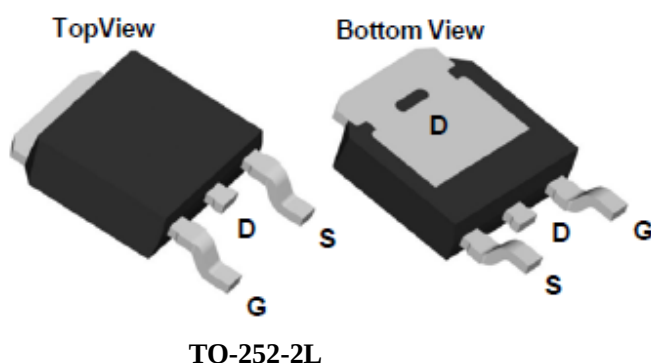
Features

The TW20N06D is the high cell density trench N ch MOSFETs, which provide excellent R_{DS(on)} and gate charge for most of the synchronous buck converter applications.

The TW20N06D meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

BVDSS	R _{DS(on)}	I _D
60V	25mΩ	20A



Maximum Ratings(Ta=25°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°C	20	A
Continuous Drain Current, V _{GS} @10V ¹	I _D @TC=100°C	10	
Pulsed Drain Current ①	I _{DM}	80	
Single Pulse Avalanche Energy	E _{AS}	39	mJ
Power Dissipation ②	P _D	41.7	W
Thermal Resistance Junction-Case	R _{θJC}	50	°C/W
Operating Junction	T _J	-55~+175	°C
Storage Temperature	T _{STG}	-55~+175	°C

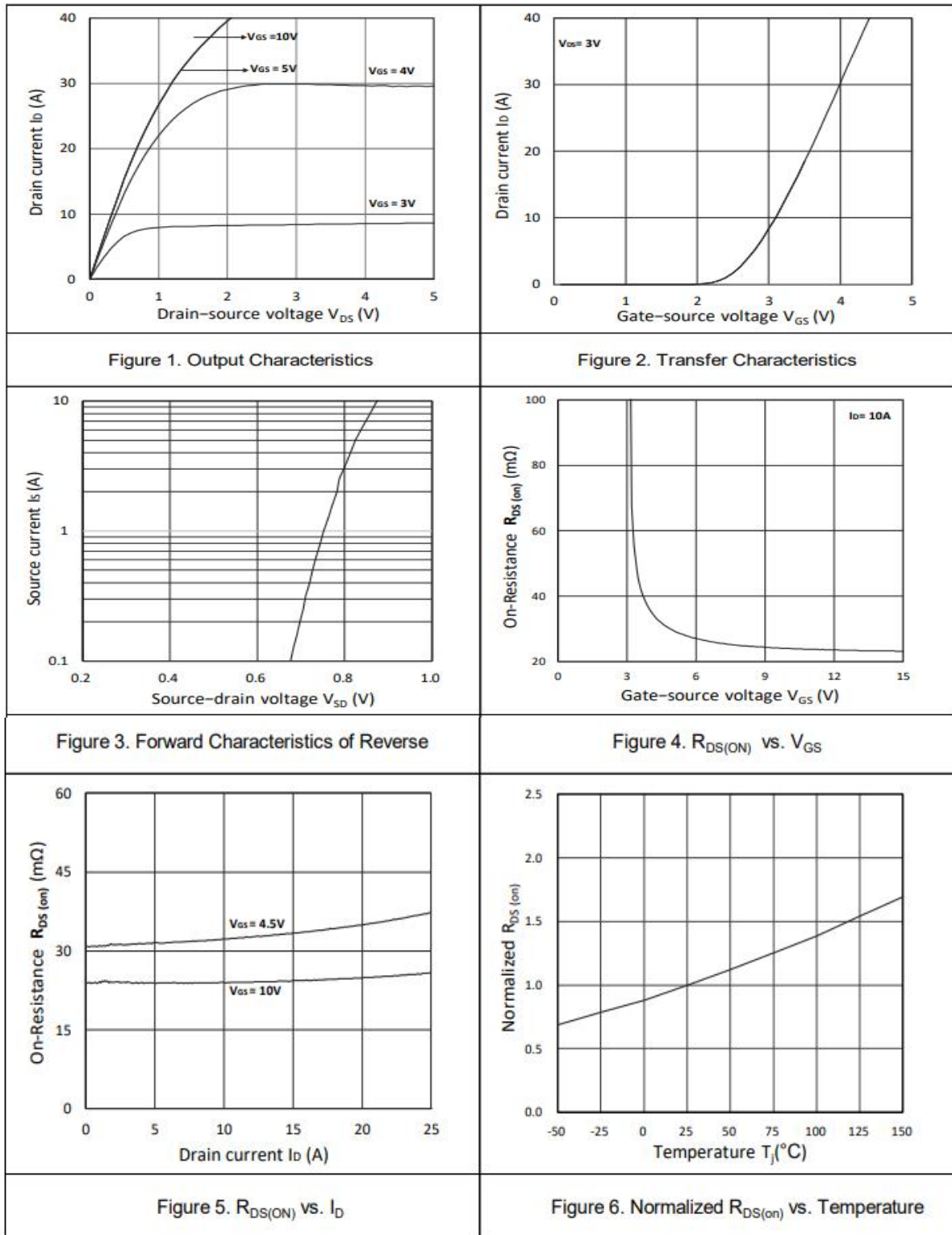
Electrical Characteristics(TJ=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Parameters						
Drain-Source Breakdown Voltage	BVDSS	VGS = 0V, ID = 250μA	60			V
Gate Threshold Voltage	VGS(th)	VDS =VGS, ID = 250μA	1.2	1.7	2.5	V
Gate-Body leakage Current	IGSS	VDS =0V, VGS = ±20V			±100	nA
Zero Gate Voltage Drain Current	IDSS	VDS = 60V, VGS =0V			1	μA
Static Drain-Source On-Resistance	RDS(on)	VGS = 10V, ID = 10A		25	32	mΩ
	RDS(on)	VGS = 4.5V, ID = 5A		31.5	40	mΩ
Dynamic Parameters						
Input Capacitance	Ciss	VDS = 30V, VGS =0V, f =1MHz		1355		pF
Output Capacitance	Coss			60		pF
Reverse Transfer Capacitance	Crss			49		pF
Total Gate Charge	Qg	VGS = 10V, VDD = 30V, ID= 10A		22		nC
Gate Source Charge	Qgs			4.2		nC
Gate Drain Charge	Qgd			6.9		nC
Switching Parameters						
Turn-On DelayTime	td(on)	VGS =10V, VDD = 30V, RG = 3Ω, ID= 10A		6.4		ns
Turn-On Rise Time	tr			15.3		ns
Turn-Off DelayTime	td(off)			25		ns
Turn-Off Fall Time	tf			7.6		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		Is			20	A
Drain to Source Diode Forward Voltage	VSD	IS = 10A, VGS = 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



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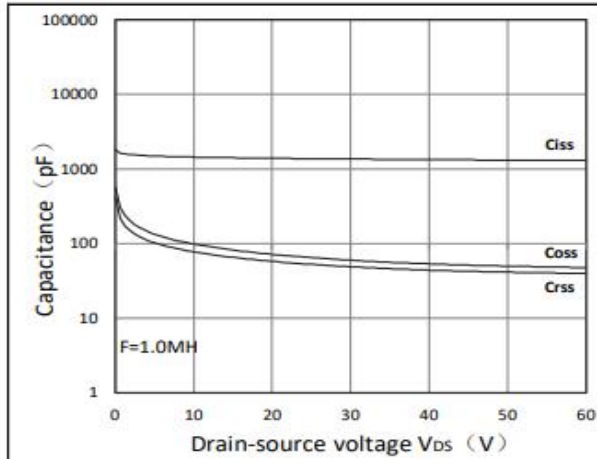


Figure 7. Capacitance Characteristics

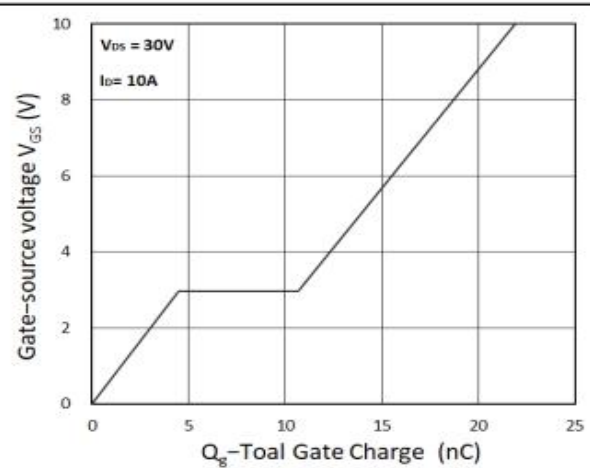


Figure 8. Gate Charge Characteristics

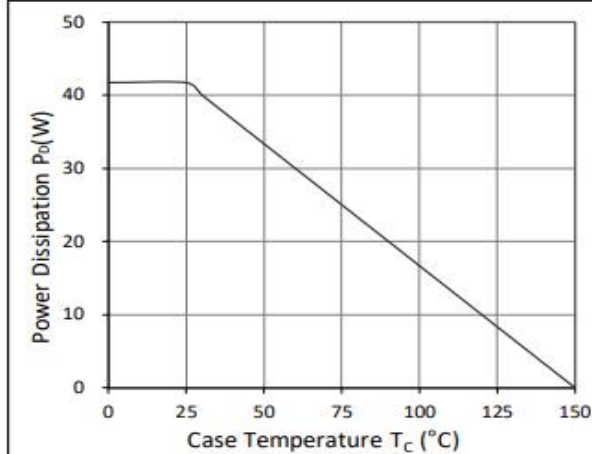


Figure 9. Power Dissipation

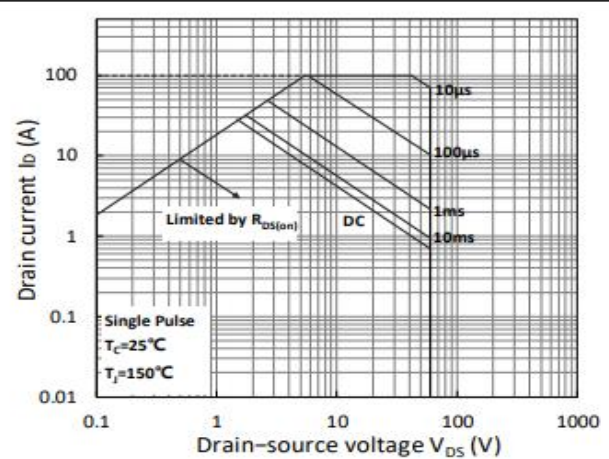


Figure 10. Safe Operating Area

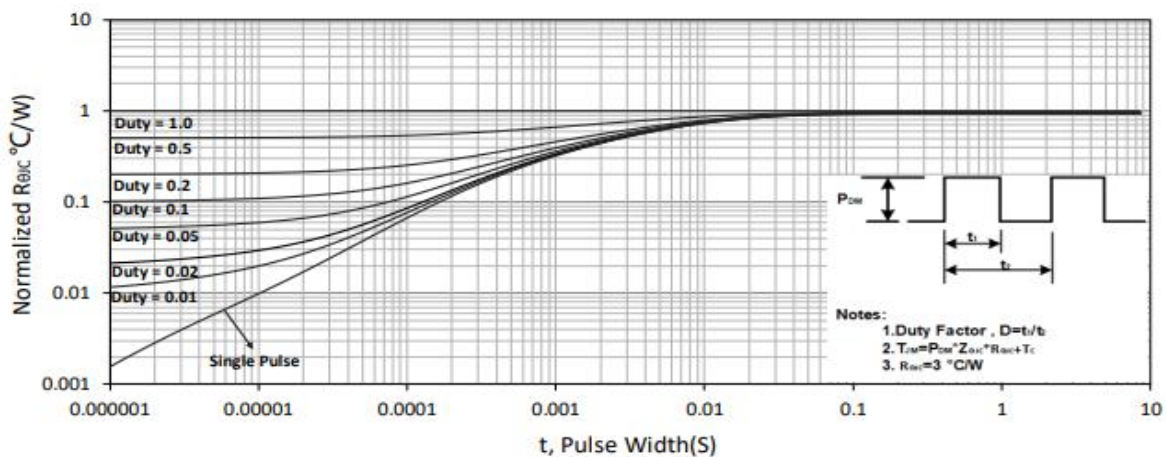
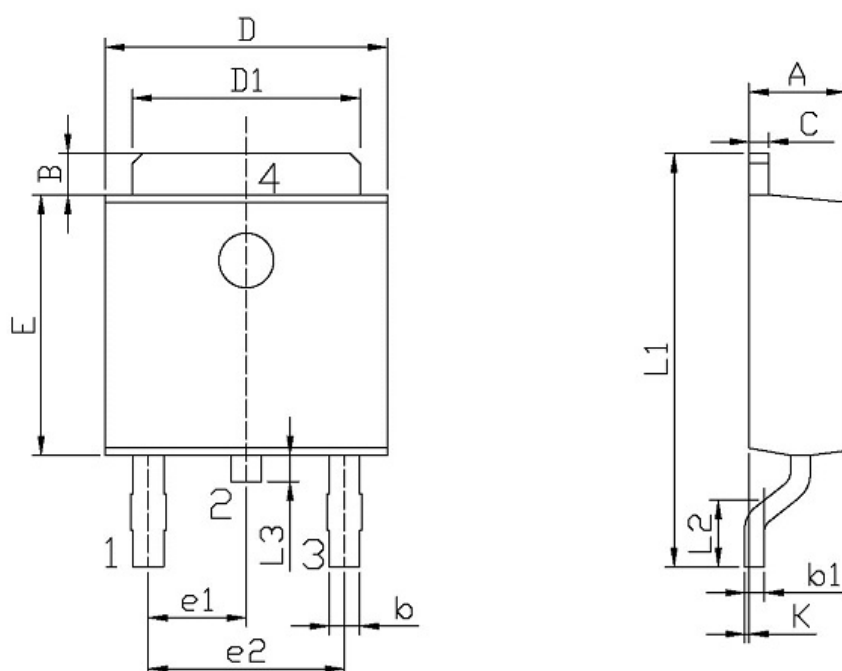


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data

Unit : mm

TO-252(DPAK)



单位: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
A	2.20	2.40	E	5.95	6.25
B	0.95	1.25	e1	2.24	2.34
b	0.50	0.70	e2	4.43	4.73
b1	0.45	0.55	L1	9.45	9.95
C	0.45	0.55	L2	1.25	1.75
D	6.45	6.75	L3	0.60	0.90
D1	5.10	5.50	K	0.00	0.10