

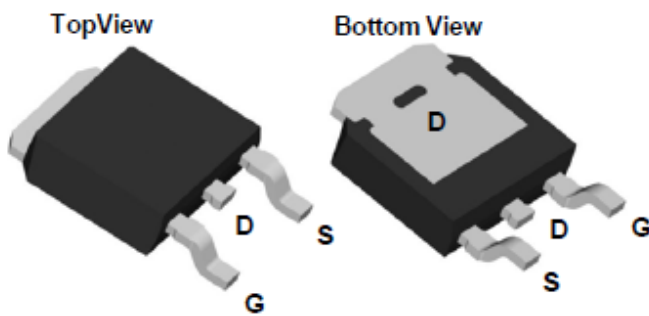
Features

The TW15N10D is the high cell density trench N ch MOSFETs, which provide excellent RDSON and gate charge for most of the synchronous buck converter applications.

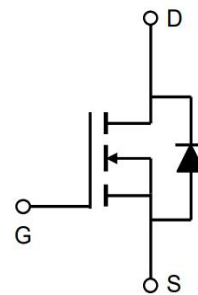
The TW15N10D meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

Product Summary

BVDSS	RDSON	ID
100V	85mΩ	15A



TO-252



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	100	V
Gate-Source Voltage	VGS	±20	
Continuous Drain Current,VGS @10V ¹	ID@TC=25°C	15	A
Continuous Drain Current,VGS @10V ¹	ID@TC=100°C	8	
Continuous Drain Current,VGS @10V ¹	ID@TA=25°C	3	
Continuous Drain Current,VGS @10V ¹	ID@TA=70°C	2.4	
Pulsed Drain Current ①	IDM	20	
Single Pulse Avalanche Energy	EAS	6.1	mJ
Avalanche Current	IAS	10	A
Power Dissipation ②	PD@TC=25°C	30	W
Power Dissipation ②	PD@TA=25°C	2	
Operating Junction	TJ	-55~+150	°C
Storage Temperature	TSTG	-55~+150	°C

Thermal Data

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction-ambient	RθJA		62	°C/W
Thermal Resistance Junction-Case	RθJC		606	°C/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}	V _{GS} = 0V, I _D = 250μA	100			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = 250μA	1.0	1.5	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} = 100V, V _{GS} =0V			1	μA
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 100V, I _D = 5A		85	110	mΩ
	R _{DS(on)}	V _{GS} = 4.5V, I _D = 3A		96	140	mΩ
Dynamic Parameters ④						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f=1.0MHz		765		pF
Output Capacitance	C _{oss}			38		pF
Reverse Transfer Capacitance	C _{rss}			33		pF
Total Gate Charge	Q _g	V _{DS} =50V, I _D =2A, V _{GS} =10V		18		nC
Gate Source Charge	Q _{gs}			2.5		nC
Gate Drain Charge	Q _{gd}			4		nC
Switching Parameters ④						
Turn-On DelayTime	t _{d(on)}	V _{DS} =50V, I _D =3A, R _G =1.8Ω, V _{GS} =		7.5		ns
Turn-On Rise Time	t _r			6		ns
Turn-Off DelayTime	t _{d(off)}			21		ns
Turn-Off Fall Time	t _f			9		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		I _s			10	A
Maximum Pulsed Drain to Source Diode Forward Current		I _{sM}			40	A
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =10A			1.2	V
Reverse Recovery Time	t _{rr}	F=3A, dI/dt=100A/μs		21		ns
Reverse Recovery Charge	Q _{rr}			22		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

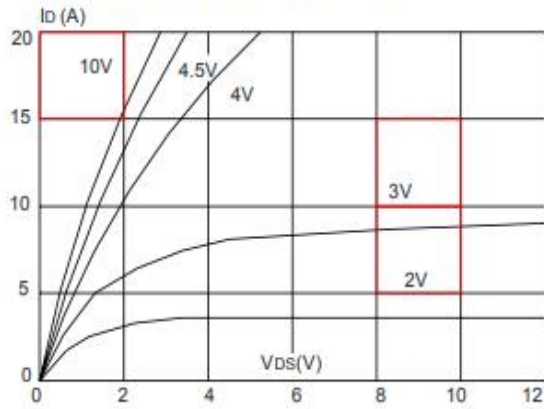


Figure 2: Typical Transfer Characteristics

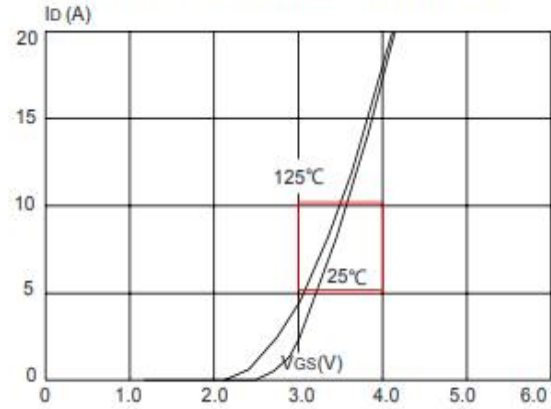


Figure 3: On-resistance vs. Drain Current

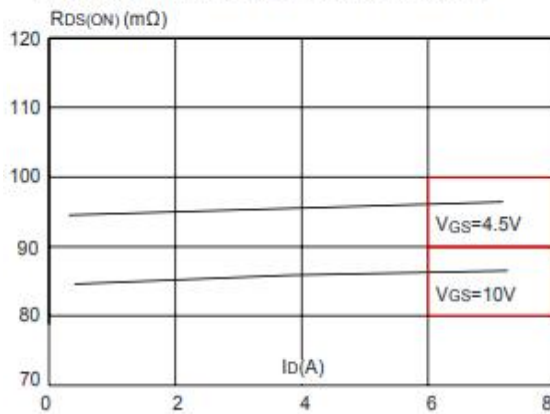


Figure 4 : Body Diode Characteristics

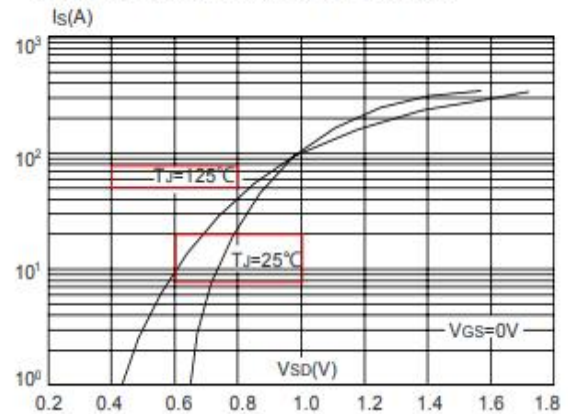


Figure 5: Gate Charge Characteristics

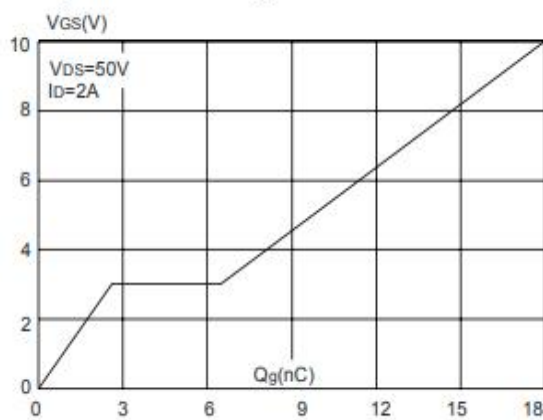
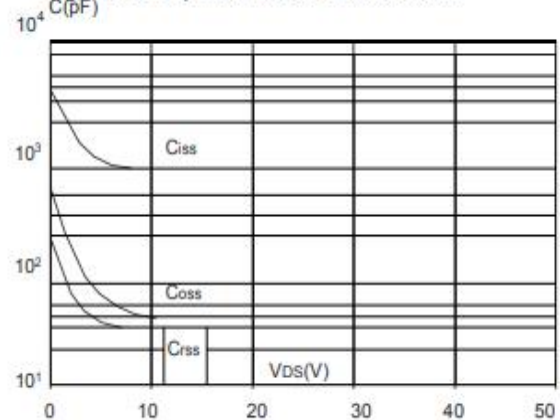


Figure 6: Capacitance Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

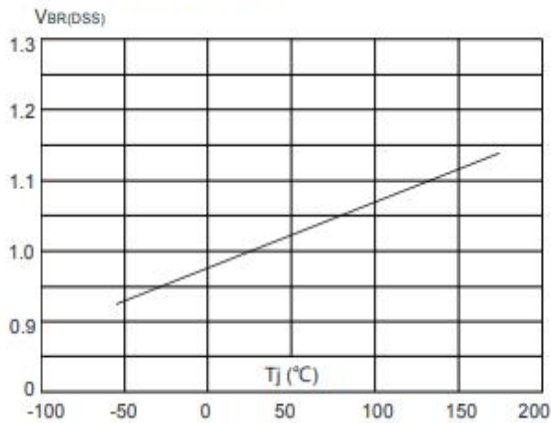


Figure 8: Normalized on Resistance vs. Junction Temperature

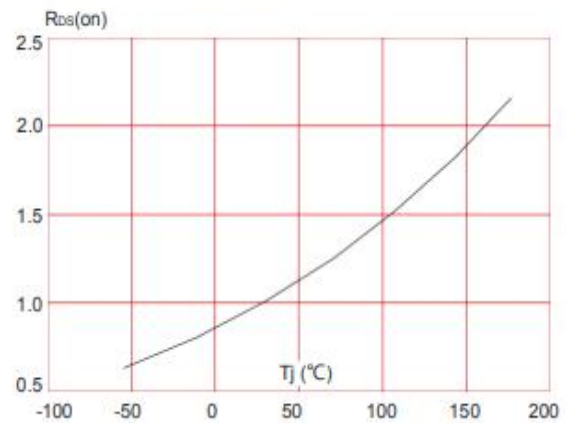


Figure 9: Maximum Safe Operating Area

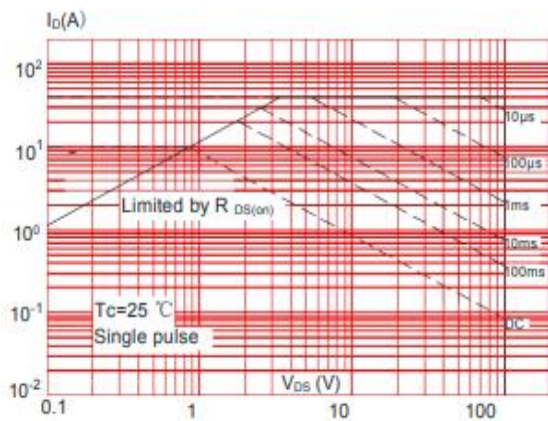


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

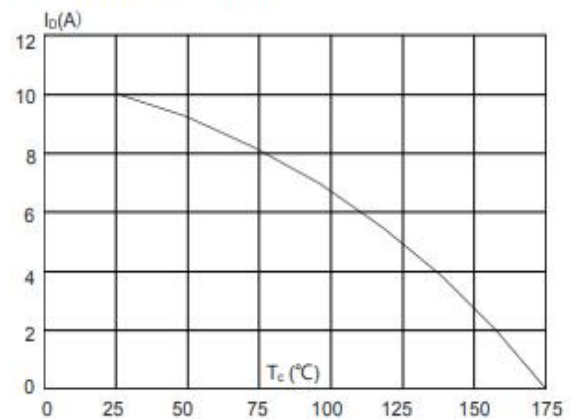
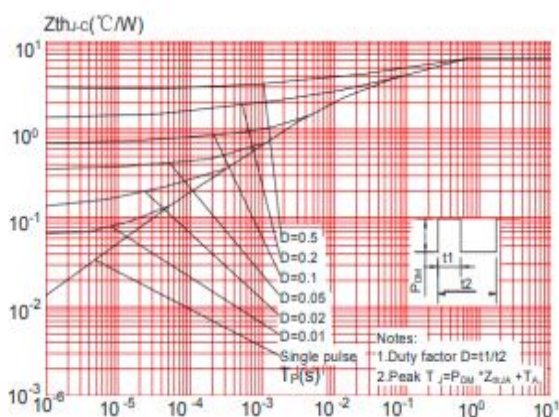
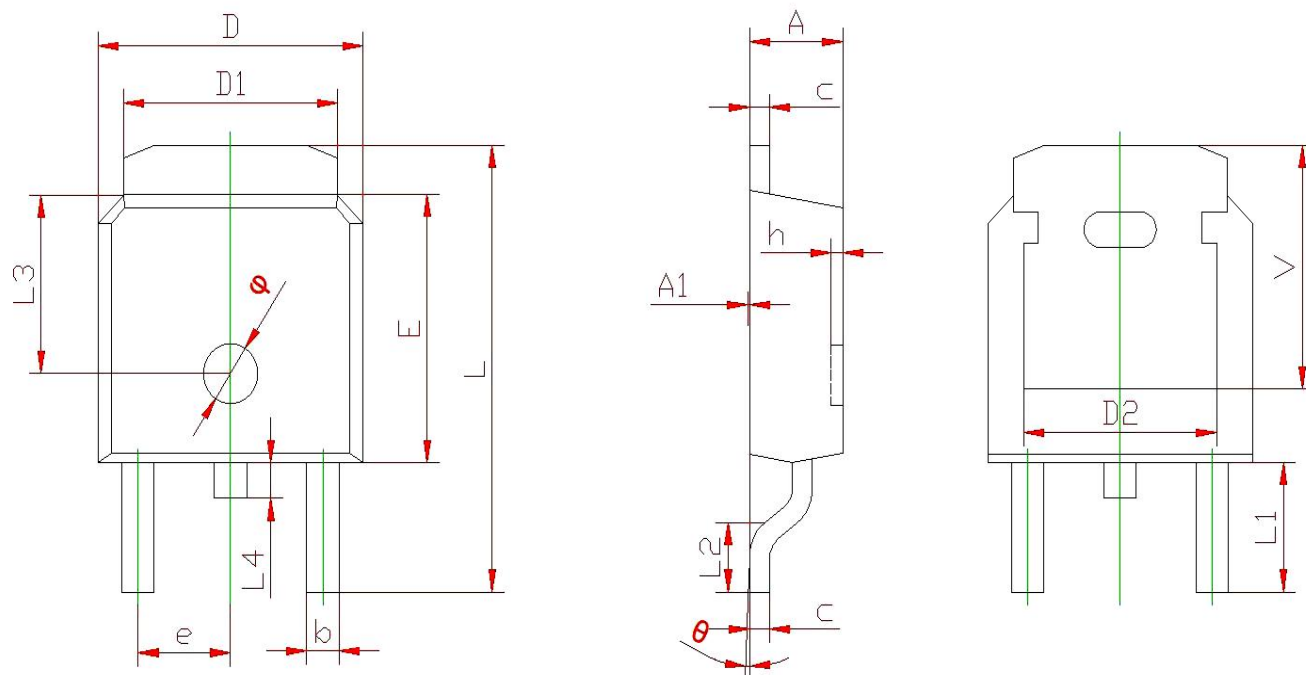


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



TO-252 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
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	9.800	10.400	0.386	0.409
L1	2.900 REF		0.114 REF	
L2	1.400	1.700	0.055	0.067
L3	4.000 REF		0.157 REF	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.5000 REF		0.217 REF	