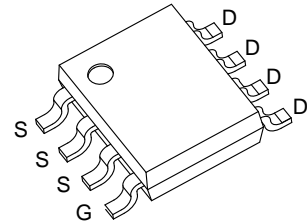


Features

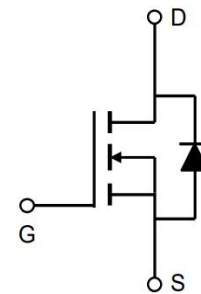
The TW15N06S is the high cell density trench N-ch MOSFETs, which provide excellent R_{DS(ON)} and gate charge for most of the synchronous buck converter applications. The TW15N06S meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

SOP-8

RoHS
COMPLIANT



Equivalent Circuit



Product Summary

V _{DS}	60V
I _D	15A
R _{DS(ON)} (at V _{GS} =10V)	<40mΩ
R _{DS(ON)} (at V _{GS} =4.5V)	< 50mΩ

Maximum Ratings(T_a=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@TA=25°C}	15	A
Continuous Drain Current, V _{GS} @ 10V	I _{D@TA=70°C}	7.5	
Pulsed Drain Current ²	I _{DM}	22	
Single Pulse Avalanche Energy	EAS	22	mJ
Avalanche Current	I _{AS}	3	A
Total Power Dissipation	PD@TA=25°C	1.5	W
Storage Temperature Range	TSTG	-55 to 150	°C
Operating Junction Temperature Range	T _J	-55 to 150	
Thermal Data			
Parameter	Symbol	Max.	Unit
Thermal Resistance Junction-ambient	R _{θJA}	85	°C/W
Thermal Resistance Junction-Case	R _{θJC}	25	

Electrical Characteristics(T_J=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	1.0	1.6	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 = 5A		28	40	mΩ
		V _{GS} = 4.5V, I _D = 3A		36	50	mΩ
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} = 25V, V _{GS} =0V, f=1MHz		1148		pF
Output Capacitance	C _{oss}			58.5		pF
Reverse Transfer Capacitance	C _{rss}			49.4		pF
Total Gate Charge	Q _g	V _{DS} =30V, I _D =2.5A, V _{GS} =10V		20.3		nC
Gate Source Charge	Q _{gs}			3.7		nC
Gate Drain Charge	Q _{gd}			5.3		nC
Switching Parameters						
Turn-On DelayTime	t _{d(on)}	V _{DS} =30V, I _D =5A, R _G =1.8Ω, V _{GS} =10V		7.6		ns
Turn-On Rise Time	t _r			20		ns
Turn-Off DelayTime	t _{d(off)}			15		ns
Turn-Off Fall Time	t _f			24		ns
Drain-Source Diode Characteristics and Maximum Ratings						
Maximum Continuous Drain to Source Diode Forward Current		I _s			5	A
Maximum Pulsed Drain to Source Diode Forward Current		I _{SM}			20	
Drain to Source Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =5A			1.2	V
Body Diode Reverse Recovery Time	t _{rr}	I _F =5A, dI/dt=100A/μs		29		ns
Body Diode Reverse Recovery Charge	Q _{rr}				43	

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

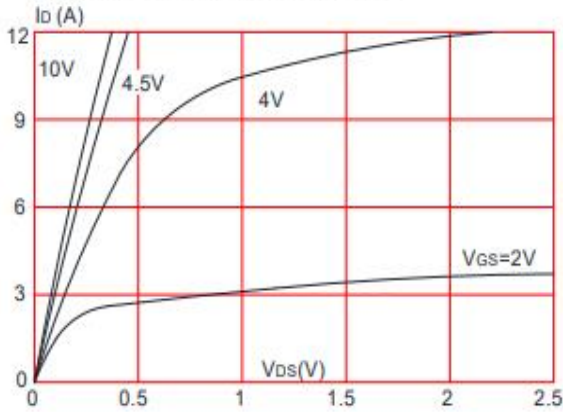


Figure 2: Typical Transfer Characteristics

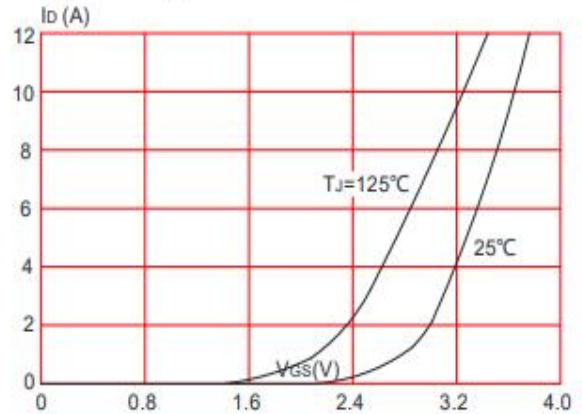


Figure 3: On-resistance vs. Drain Current

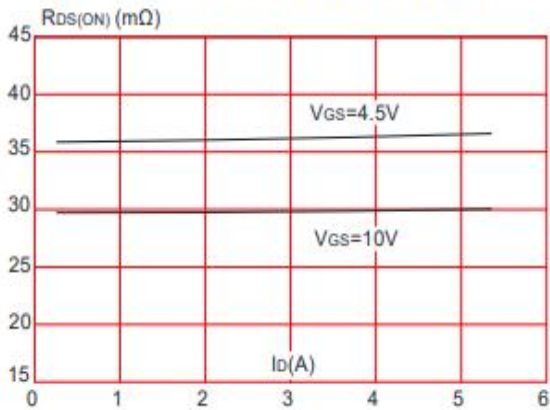


Figure 4: Body Diode Characteristics

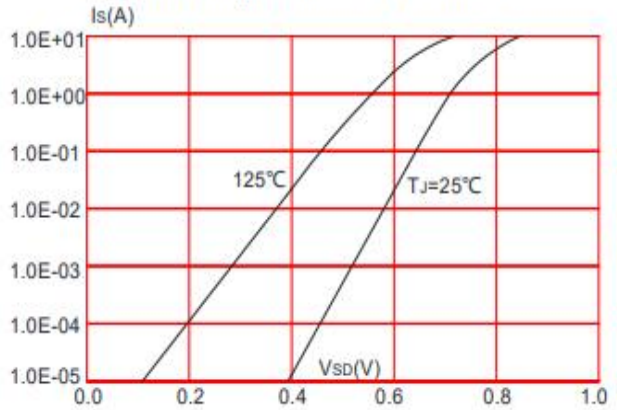


Figure 5: Gate Charge Characteristics

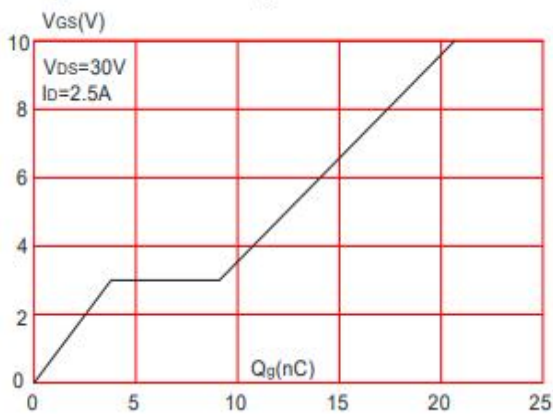
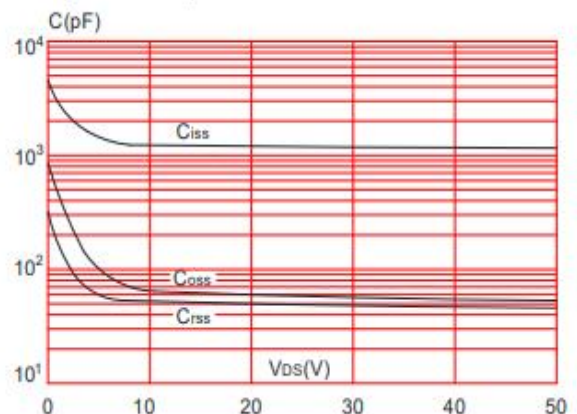


Figure 6: Capacitance Characteristics



Typical Electrical and Thermal Characteristics

Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

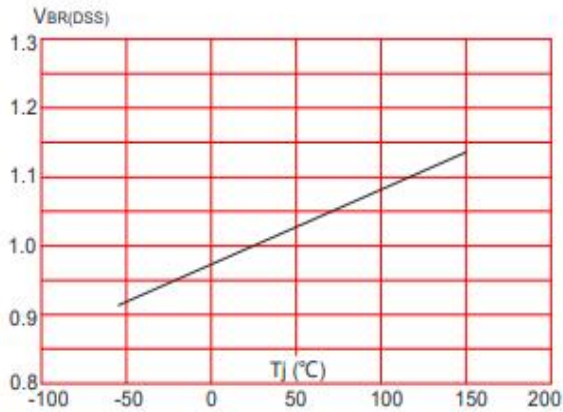


Figure 8: Normalized on Resistance vs. Junction Temperature

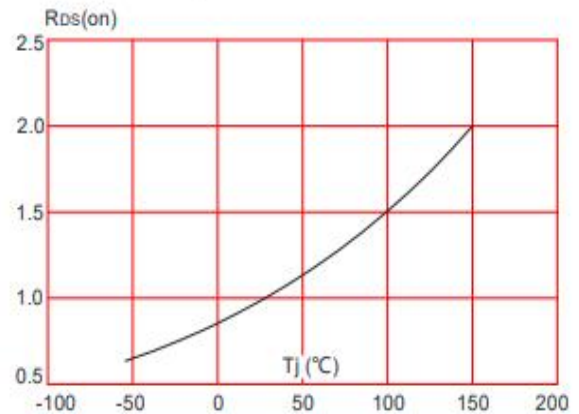


Figure 9: Maximum Safe Operating Area

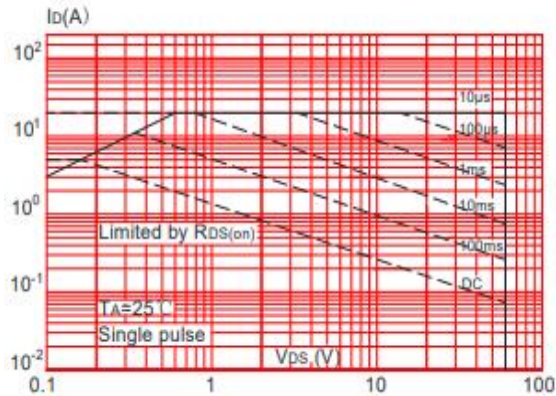


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

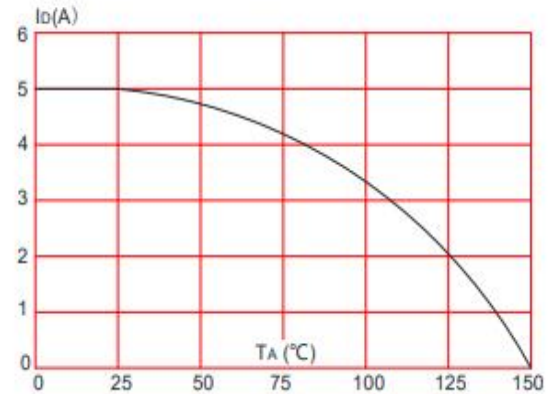
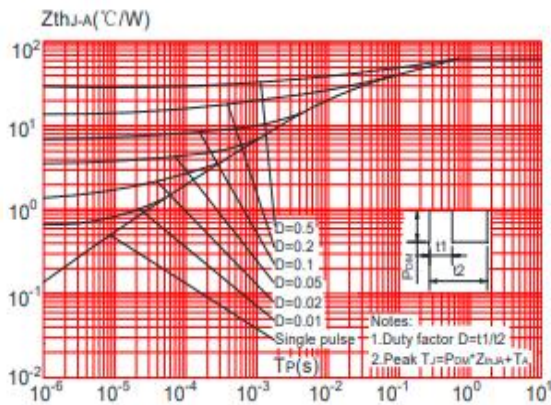
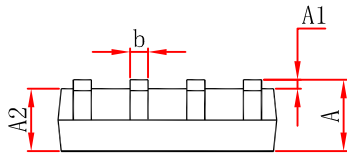
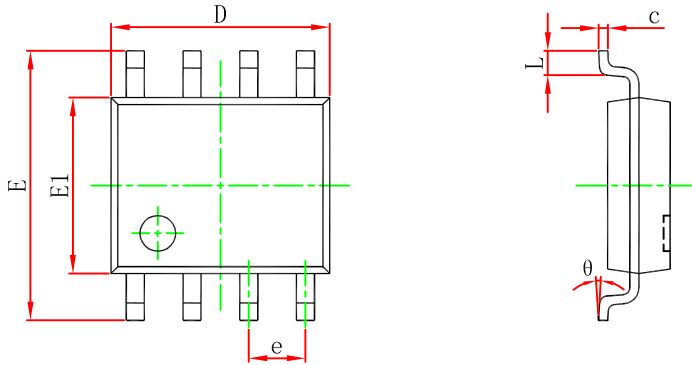


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

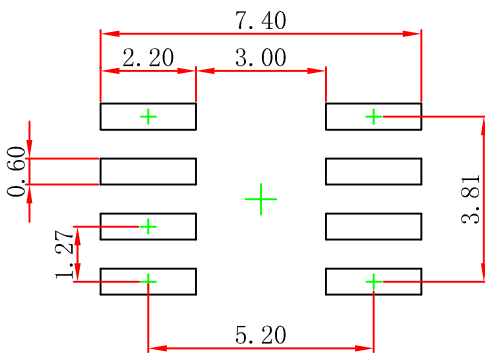


SOP8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.450	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.700	5.100	0.185	0.201
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
theta	0° to 8°		0° to 8°	

SOP8 Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
 2. General tolerance: $\pm 0.05\text{mm}$.
 3. The pad layout is for reference purposes only.