

### General Description

The WSM340N10G is the highest performance trench N-Ch MOSFET with extreme high cell density, which provide excellent R<sub>DS(on)</sub> and gate charge for most of the synchronous buck converter applications.

The WSM340N10G meet the RoHS and Green Product requirement, 100% EAS guaranteed with full function reliability approved.

### Features

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available

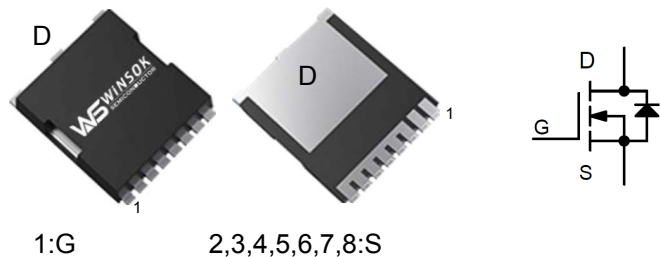
### Product Summary

BV <sub>DSS</sub>	R <sub>DS(on)</sub>	I <sub>D</sub>
100V	1.6mΩ	300A

### Applications

synchronous rectification  
DC/DC Converter  
Load switch.

### TOLL Pin Configuration



### Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V <sub>DS</sub>	Drain-Source Voltage	100	V
V <sub>GS</sub>	Gate-Source Voltage	±20	V
I <sub>D</sub> @T <sub>C</sub> =25°C	Continuous Drain Current, V <sub>GS</sub> @ 10V	300	A
I <sub>D</sub> @T <sub>C</sub> =100°C	Continuous Drain Current, V <sub>GS</sub> @ 10V	230	A
I <sub>DM</sub>	Pulsed Drain Current T <sub>C</sub> =25°C	1150	A
EAS	Avalanche Energy, Single pulse, L=0.5mH	1800	mJ
I <sub>AS</sub>	Avalanche Current, Single pulse, L=0.5mH	120	A
P <sub>D</sub> @T <sub>C</sub> =25°C	Total Power Dissipation	375	W
P <sub>D</sub> @T <sub>C</sub> =100°C	Total Power Dissipation	187	W
T <sub>STG</sub>	Storage Temperature Range	-55 to 175	°C
T <sub>J</sub>	Operating Junction Temperature Range	175	°C

### Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R <sub>θJA</sub>	Thermal Resistance Junction-Ambient	---	50	°C/W
R <sub>θJC</sub>	Thermal Resistance Junction-Case	---	0.4	°C/W

**Electrical Characteristics (T<sub>J</sub>=25 °C, unless otherwise noted)**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV <sub>DSS</sub>	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA	100	---	---	V
ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	BV <sub>DSS</sub> Temperature Coefficient	Reference to 25°C, I <sub>D</sub> =1mA	---	0.096	---	V/°C
R <sub>DS(ON)</sub>	Static Drain-Source On-Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =50A	---	1.6	2.3	mΩ
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	2.0	3.0	4.0	V
ΔV <sub>GS(th)</sub>	V <sub>GS(th)</sub> Temperature Coefficient		---	-5.5	---	mV/°C
I <sub>DSS</sub>	Drain-Source Leakage Current	V <sub>DS</sub> =85V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	μA
		V <sub>DS</sub> =85V, V <sub>GS</sub> =0V, T <sub>J</sub> =55°C	---	---	10	
I <sub>GSS</sub>	Gate-Source Leakage Current	V <sub>GS</sub> =±25V, V <sub>DS</sub> =0V	---	---	±100	nA
R <sub>g</sub>	Gate Resistance	V <sub>DS</sub> =0V, V <sub>GS</sub> =0V, f=1MHz	---	1.0	---	Ω
Q <sub>g</sub>	Total Gate Charge (10V)	V <sub>DS</sub> =50V, V <sub>GS</sub> =10V, I <sub>D</sub> =50A	---	260	---	nC
Q <sub>gs</sub>	Gate-Source Charge		---	80	---	
Q <sub>gd</sub>	Gate-Drain Charge		---	60	---	
T <sub>d(on)</sub>	Turn-On Delay Time	V <sub>DD</sub> =50V, V <sub>GS</sub> =10V, R <sub>G</sub> =1Ω, R <sub>L</sub> =1Ω, I <sub>DS</sub> =1A.	---	88	---	ns
T <sub>r</sub>	Rise Time		---	50	---	
T <sub>d(off)</sub>	Turn-Off Delay Time		---	228	---	
T <sub>f</sub>	Fall Time		---	322	---	
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =40V, V <sub>GS</sub> =0V, f=1MHz	---	13900	---	pF
C <sub>oss</sub>	Output Capacitance		---	6160	---	
C <sub>rss</sub>	Reverse Transfer Capacitance		---	220	---	

**Diode Characteristics**

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I <sub>S</sub>	Continuous Source Current	V <sub>G</sub> =V <sub>D</sub> =0V, Force Current	---	---	160	A
V <sub>SD</sub>	Diode Forward Voltage	V <sub>GS</sub> =0V, I <sub>S</sub> =50A, T <sub>J</sub> =25°C	---	---	1.2	V

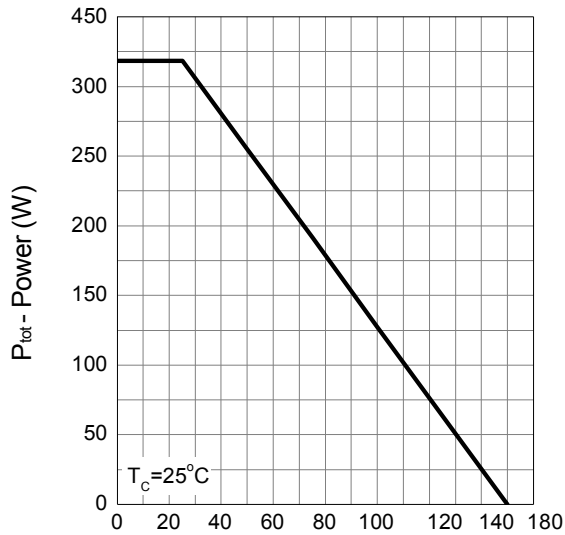
A: The value of R<sub>θJA</sub> is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with T<sub>A</sub>=25°C. The value in any given application depends on the user's specific board design.

B: Repetitive rating, pulse width limited by junction temperature.

C: The current rating is based on the t<sub>s</sub> 10s junction to ambient thermal resistance rating.

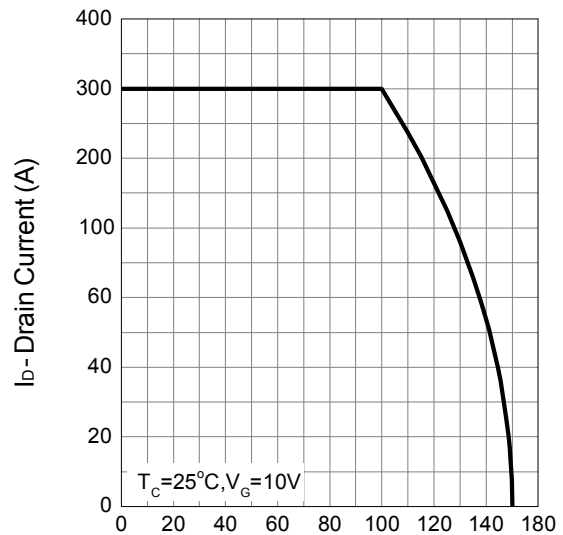
### Typical Operating Characteristics

**Power Dissipation**



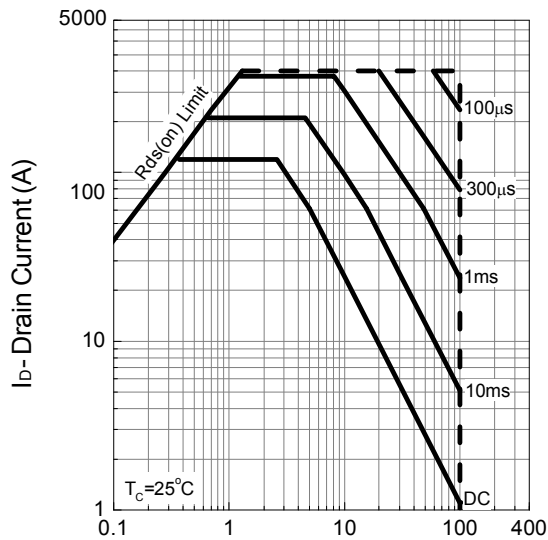
T<sub>j</sub> - Junction Temperature (°C)

**Drain Current**



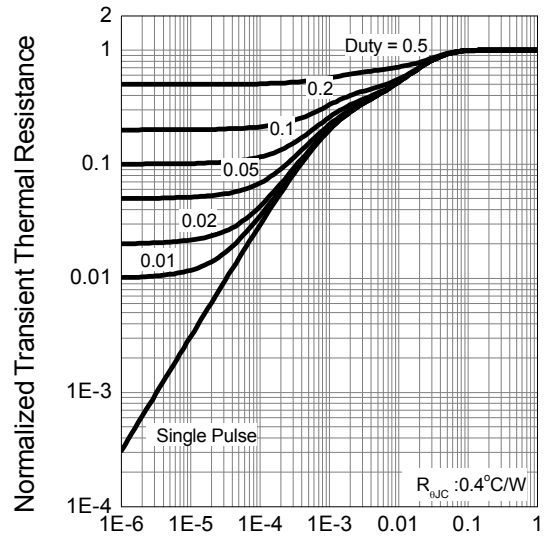
T<sub>j</sub> - Junction Temperature (°C)

**Safe Operation Area**



V<sub>DS</sub> - Drain - Source Voltage (V)

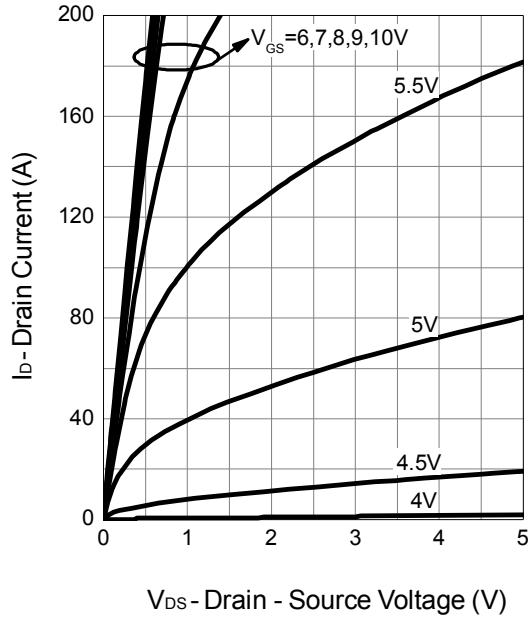
**Thermal Transient Impedance**



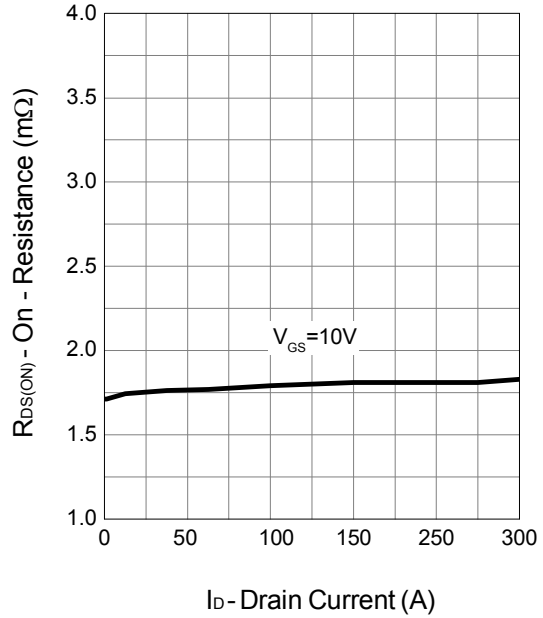
Square Wave Pulse Duration (sec)

### Typical Operating Characteristics

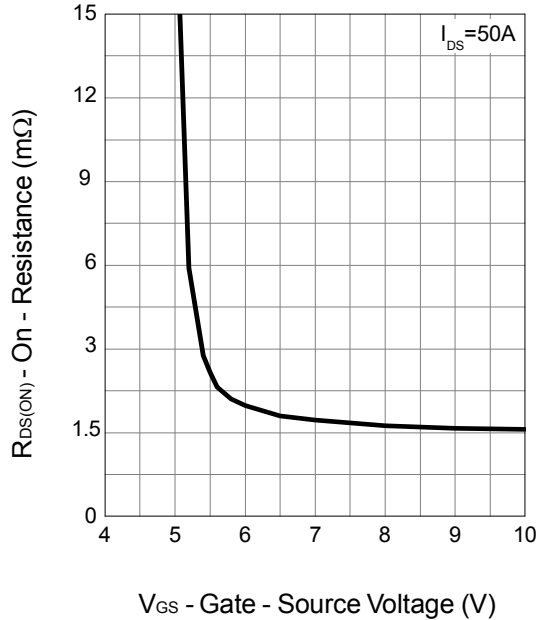
**Output Characteristics**



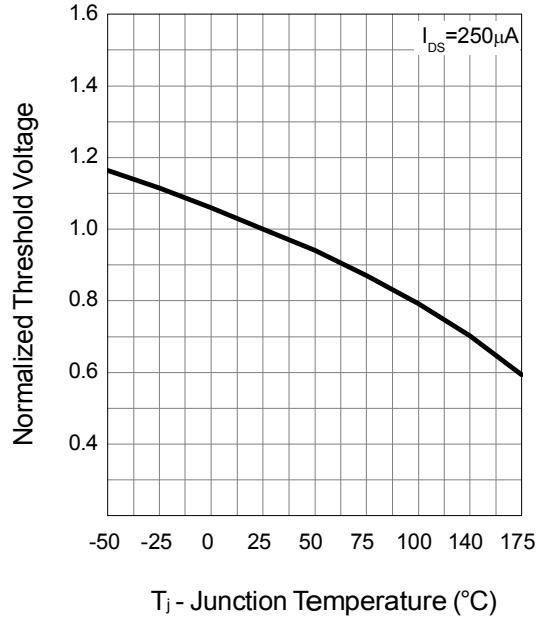
**Drain-Source On Resistance**



**Gate-Source On Resistance**

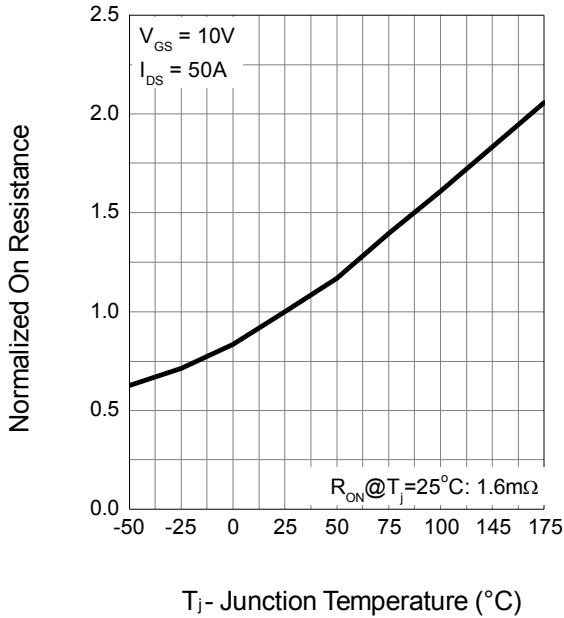


**Gate Threshold Voltage**

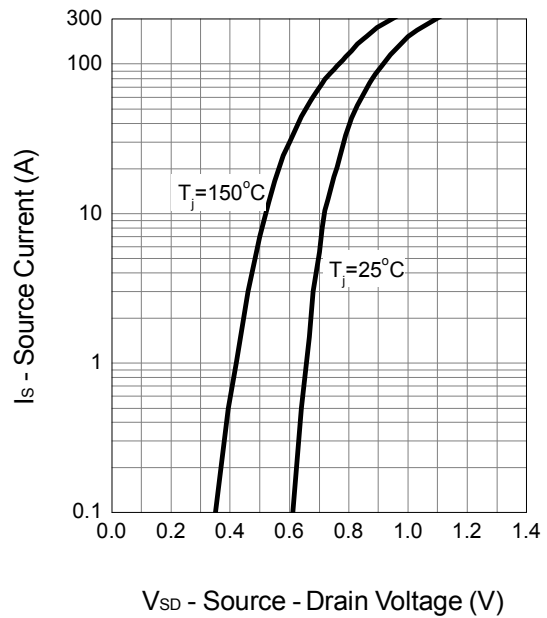


### Typical Operating Characteristics

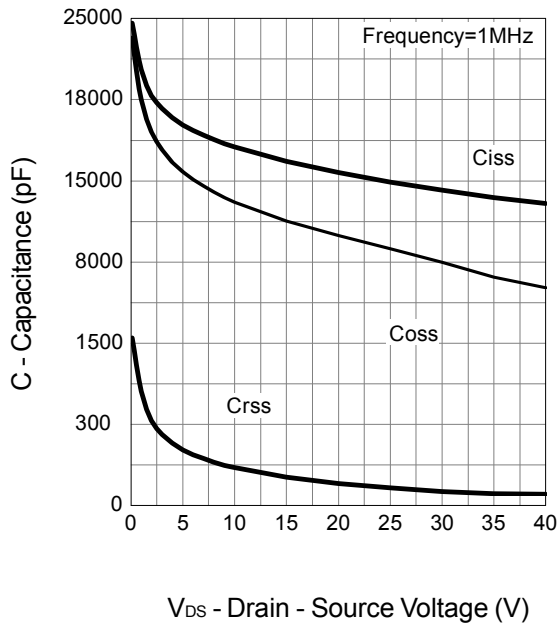
**Drain-Source On Resistance**



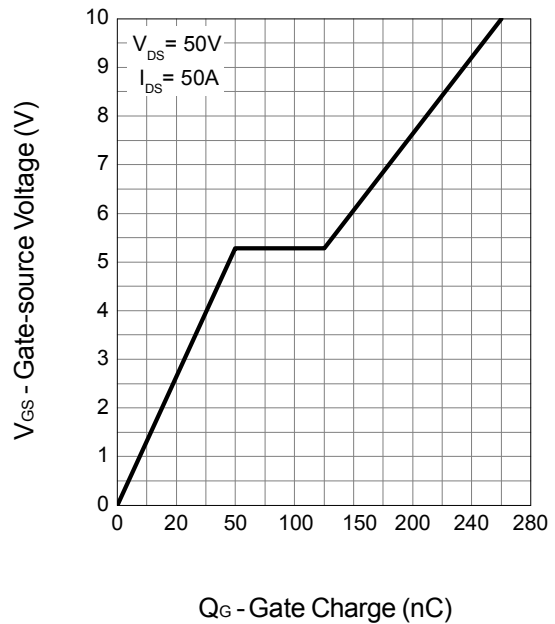
**Source-Drain Diode Forward**



**Capacitance**



**Gate Charge**





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