General Description

The WSK140N06 is the highest performance trench N-Ch MOSFET with extreme high cell density , which provide excellent RDSON and gate charge for most of the synchronous buck converter applications .

Product Summery

BV_{DSS}	R_{DSON}	I_D
60V	5.3mΩ	140A

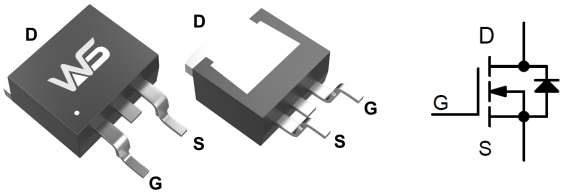
Applications

Power Management for Inverter Systems.

Features

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

TO-263-2L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
V_{DSS}	Drain-Source Voltage		60	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current	T_C=25°C	140	A
		T_C=100°C	70	A
I_{DM}	Pulsed Drain Current *	T_C=25°C	380	A
P_D	Maximum Power Dissipation	T_C=25°C	107	W
		T_C=100°C	53	W
I_S	Diode Continuous Forward Current	T_C=25°C	140	A
E_{AS}	Avalanche Energy, Single Pulsed	L=1mH	500	mJ
T_J	Maximum Junction Temperature		150	°C
T_{STG}	Storage Temperature Range		-55 to 150	°C

Thermal Resistance

Symbol	Parameter	Rating	Unit
$R_{\theta JC}$	Thermal Resistance-Junction to Case	1.4	°C/W
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient	62	

Note :

* Repetitive rating ; pulse width limiited by junction temperatu

** Drain current is limited by junction temperature

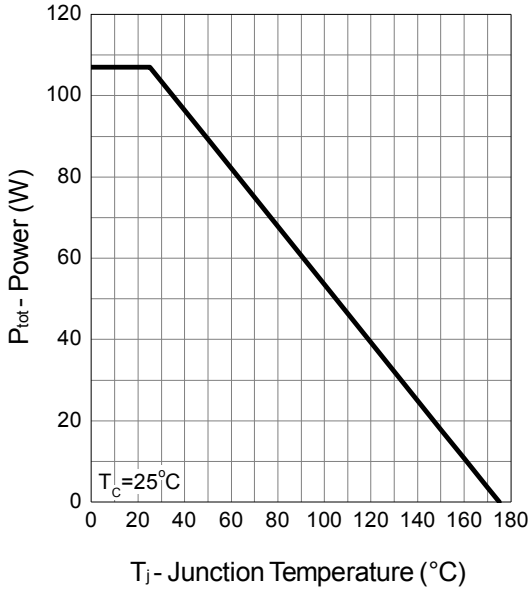
Electrical Characteristics (T= 25℃Unless Otherwise Noted)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_{DS}=250uA	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}=0V	-	-	1	A
		T_J=85°C	-	-	10	
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_{DS}=250uA	2.0	3.0	4.0	V
I_{GSS}	Gate Leakage Current	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
$R_{DS(ON)}$*	Drain-Source On-state Resistance	V_{GS}=10V, I_{DS}=40A	-	5.3	7.0	mΩ
Diode Characteristics						
V_{SD}*	Diode Forward Voltage	I_{SD}=20 A, V_{GS}=0V	-	-	1.3	V
trr	Reverse Recovery Time	I_{SD}=40A, d_{ISD}/dt=100A/us	-	45	-	ns
Qrr	Reverse Recovery Charge		-	65	-	nC
Dynamic Characteristics						
R_G	Gate Resistance	V_{GS}=0V,V_{DS}=0V,F=1MHz	-	1.1	-	Ω
C_{iss}	Input Capacitance	V_{GS}=0V, V_{DS}=25V, Frequency=1.0MHz	-	4136	-	pF
C_{oss}	Output Capacitance		-	340	-	
C_{rss}	Reverse Transfer Capacitance		-	260	-	
$td_{(ON)}$	Turn-on Delay Time	V_{DD}=30V, R_G=1.8 Ω, I_{DS} =1A, V_{GS}=10V,	-	22	-	ns
Tr	Turn-on Rise Time		-	24	-	
$td_{(OFF)}$	Turn-off Delay Time		-	108	-	
Tf	Turn-off Fall Time		-	50	-	
Gate Charge Characteristics						
Q_g	Total Gate Charge	V_{DS}=30V, V_{GS}=10V, I_{DS}=40A	-	90	-	nC
Q_{gs}	Gate-Source Charge		-	15	-	
Q_{gd}	Gate-Drain Charge		-	28	-	

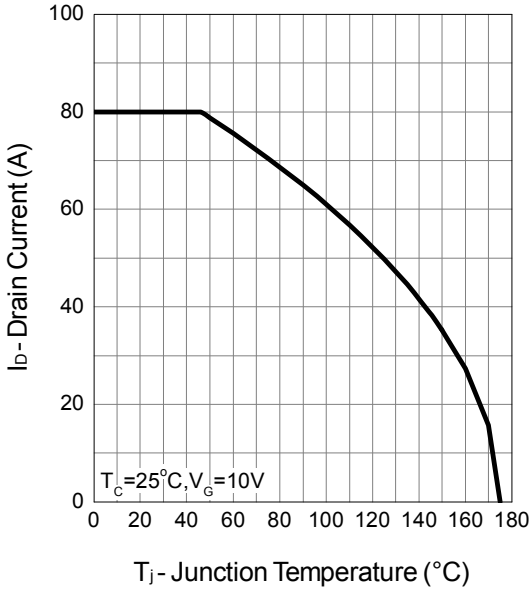
Note * : Pulse test ; pulse width≤300us, duty cycle≤2%.

Typical Operating Characteristics

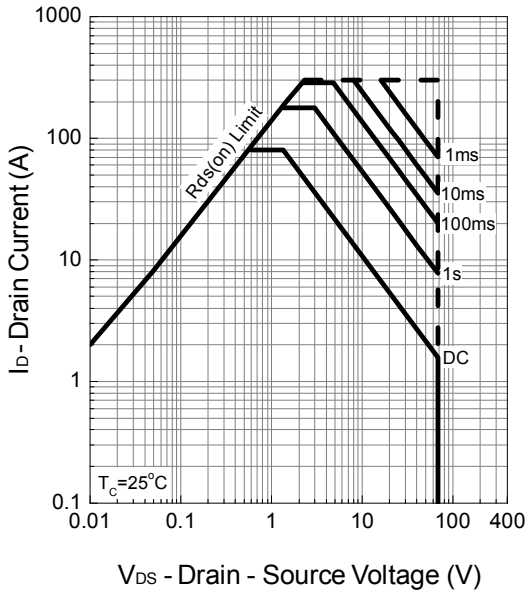
Power Dissipation



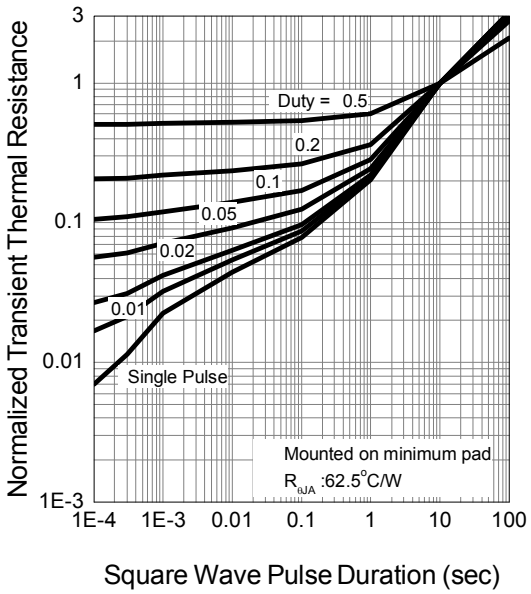
Drain Current



Safe Operation Area

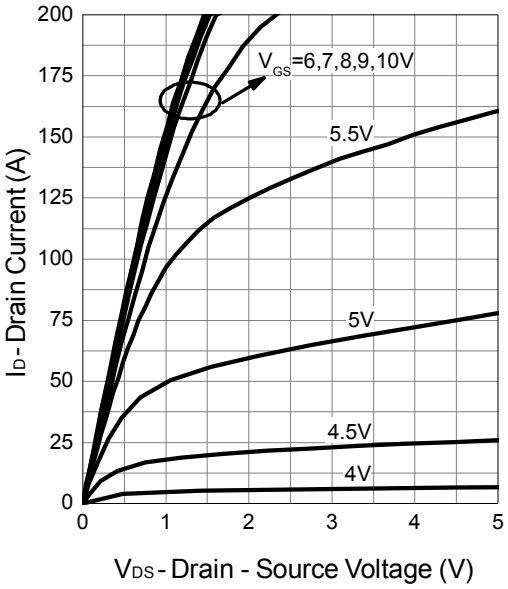


Thermal Transient Impedance

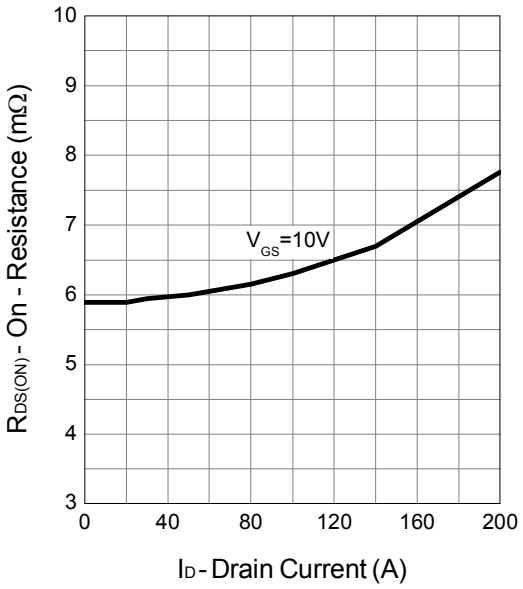


Typical Operating Characteristics (Cont.)

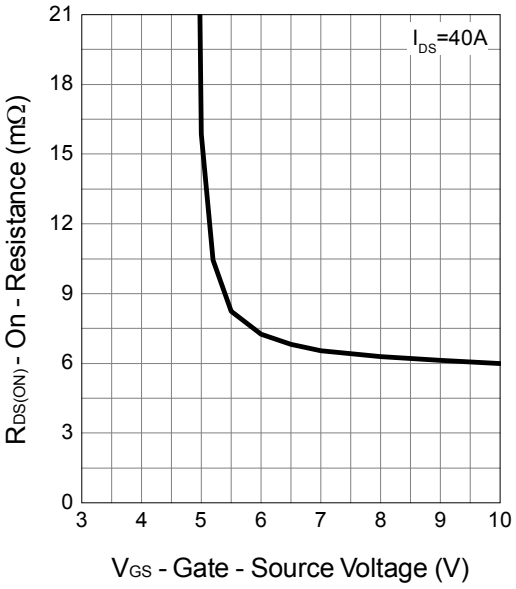
Output Characteristics



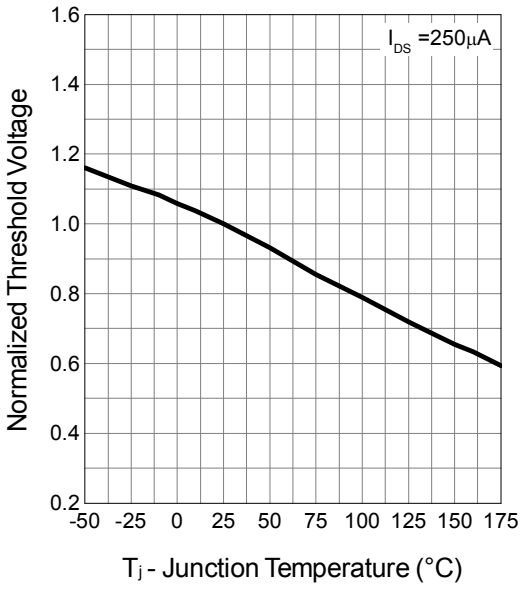
Drain-Source On Resistance



Gate-Source On Resistance

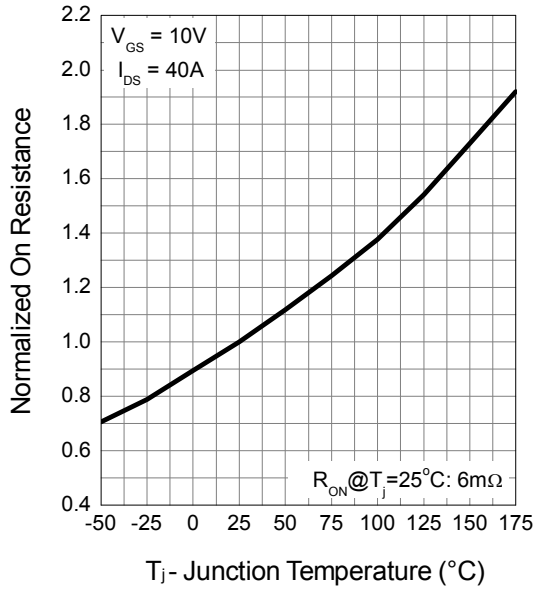


Gate Threshold Voltage

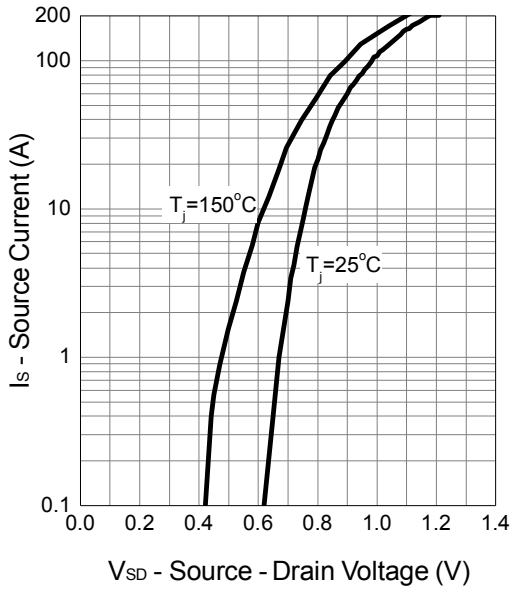


Typical Operating Characteristics (Cont.)

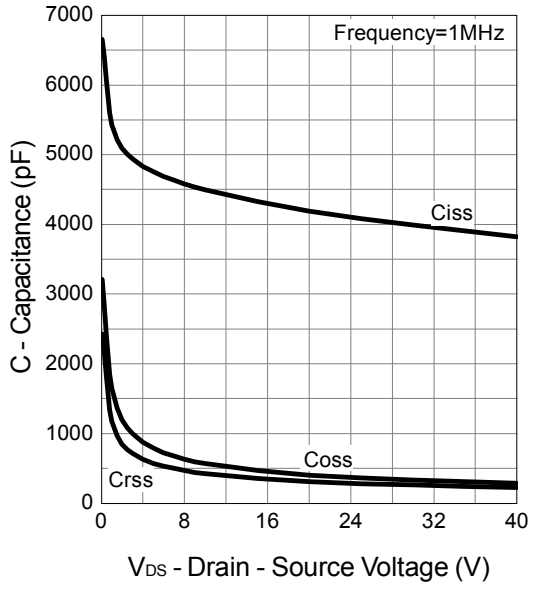
Drain-Source On Resistance



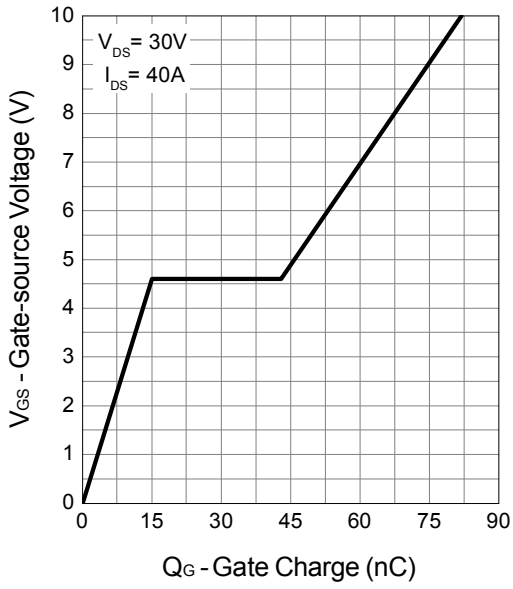
Source-Drain Diode Forward



Capacitance



Gate Charge



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