

General Description

The WSD60P06DN56 is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent R_{DS(on)} and gate charge for most of the synchronous buck converter applications.

The WSD60P06DN56 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

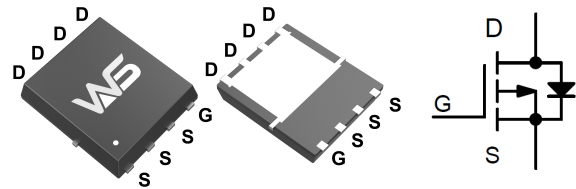
Product Summary

BVDSS	R _{DS(on)}	I _D
-60V	20mΩ	-60A

Applications

- Power Management
- Load Switch

DFN5X6_8L Pin Configuration



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @T _C =25°C	Continuous Drain Current, -V _{GS} @ -10V	-60	A
I _D @T _C =100°C	Continuous Drain Current, -V _{GS} @ -10V	-31	A
I _{DM}	Pulsed Drain Current	-140	A
P _D @T _C =25°C	Total Power Dissipation	56	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction-Ambient	---	62.5	°C/W
R _{θJC}	Thermal Resistance Junction-Case	---	2.2	°C/W

P-Channel Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250uA	-60	---	---	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-10V, I _D =-18A	---	20	25	mΩ
		V _{GS} =-4.5V, I _D =-12A	---	23	30	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =-250uA	-1.0	-1.85	-2.5	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =-32V, V _{GS} =0V, T _J =25°C	---	---	1	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA
Q _g	Total Gate Charge	V _{DS} = -30 V, V _{GS} = -10 V, I _D = -17A	---	72	---	nC
Q _{gs}	Gate-Source Charge		---	11	---	
Q _{gd}	Gate-Drain Charge		---	16	---	
T _{d(on)}	Turn-On Delay Time	V _{DD} = -30 V, R _L = 30Ω I _D = -1 A, V _{GEN} = -10 V, R _g = 6Ω	---	12	---	ns
T _r	Rise Time		---	10	---	
T _{d(off)}	Turn-Off Delay Time		---	125	---	
T _f	Fall Time		---	45	---	
C _{iss}	Input Capacitance	V _{DS} =-30V, V _{GS} =0V, f=1.0MHz	---	3300	---	pF
C _{oss}	Output Capacitance		---	265	---	
C _{rss}	Reverse Transfer Capacitance		---	125	---	

Diode Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	T _C =25°C	---	---	-20	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =-1A, T _J =25°C	---	---	-1.2	V

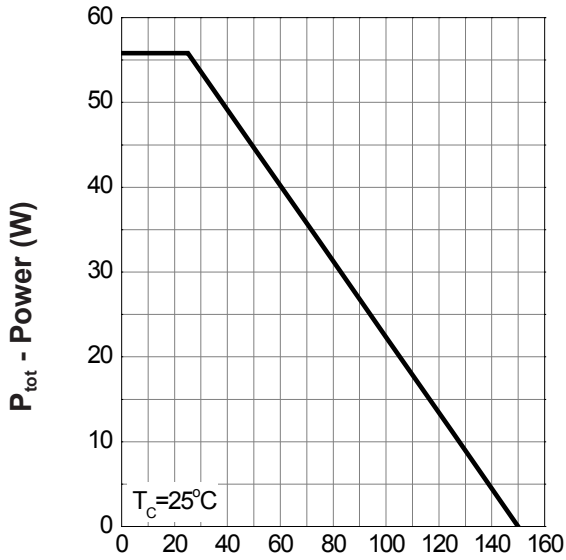
A: The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

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

C: The current rating is based on the t_s 10s junction to ambient thermal resistance rating.

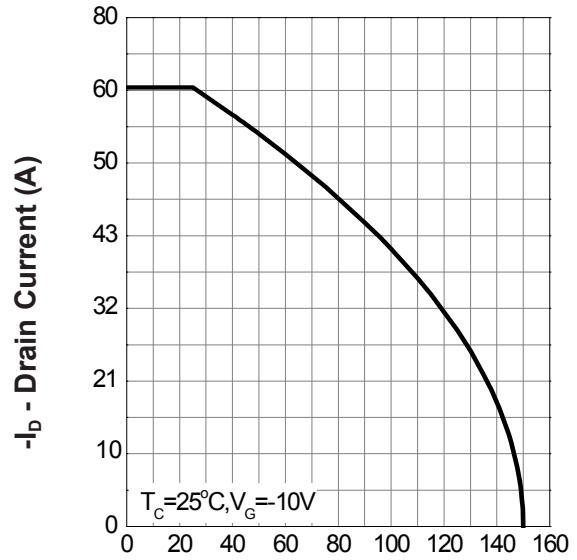
Typical Operating Characteristics

Power Dissipation



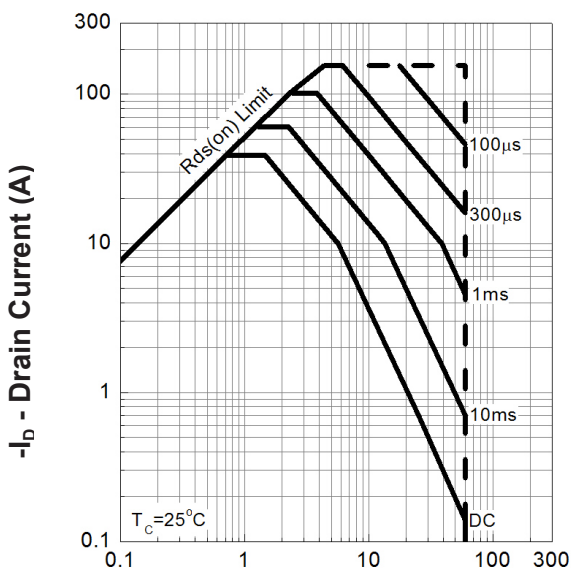
T_j - Junction Temperature ($^\circ\text{C}$)

Drain Current



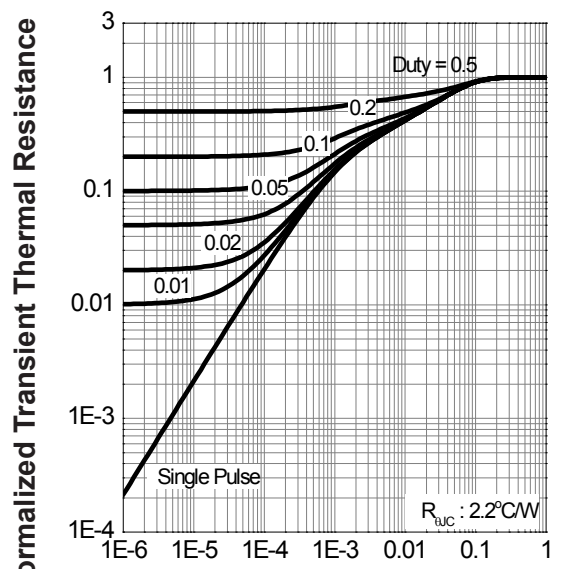
T_j - Junction Temperature ($^\circ\text{C}$)

Safe Operation Area



$-V_{DS}$ - Drain - Source Voltage (V)

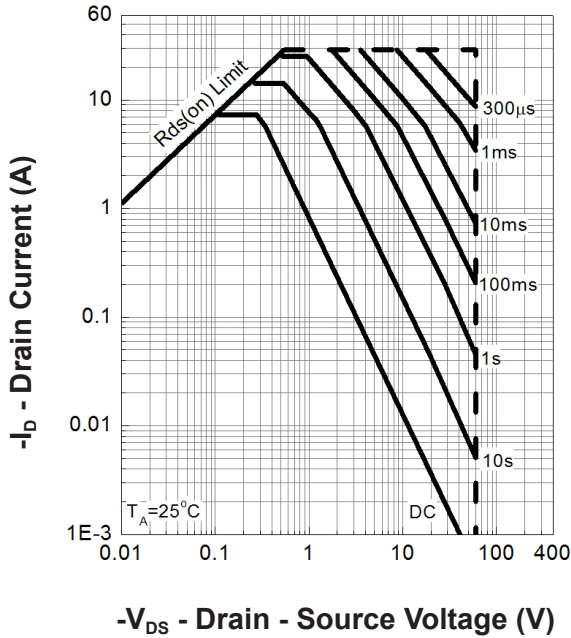
Thermal Transient Impedance



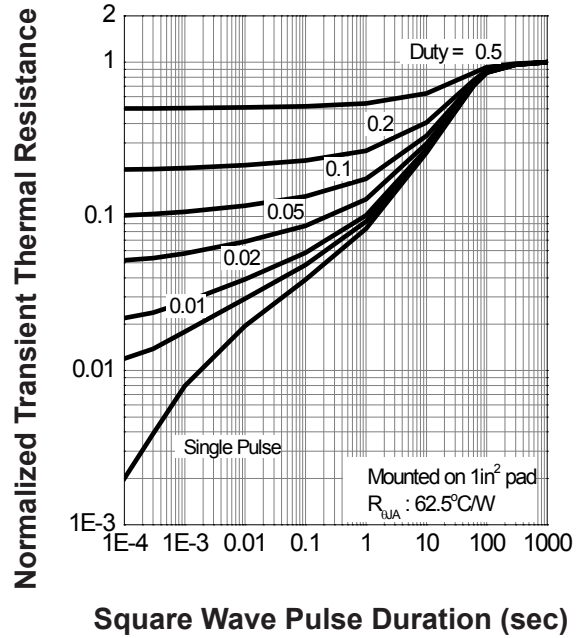
Square Wave Pulse Duration (sec)

Typical Operating Characteristics

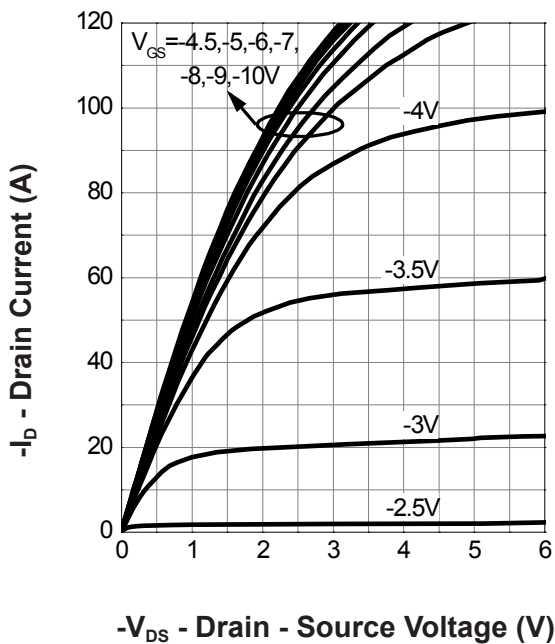
Safe Operation Area



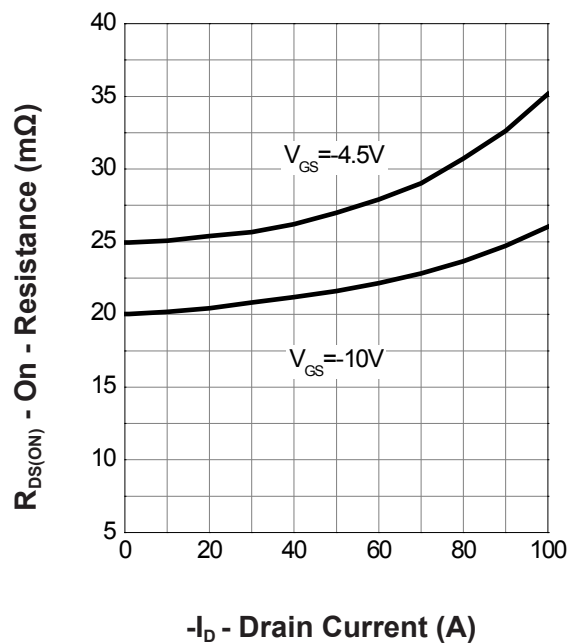
Thermal Transient Impedance



Output Characteristics

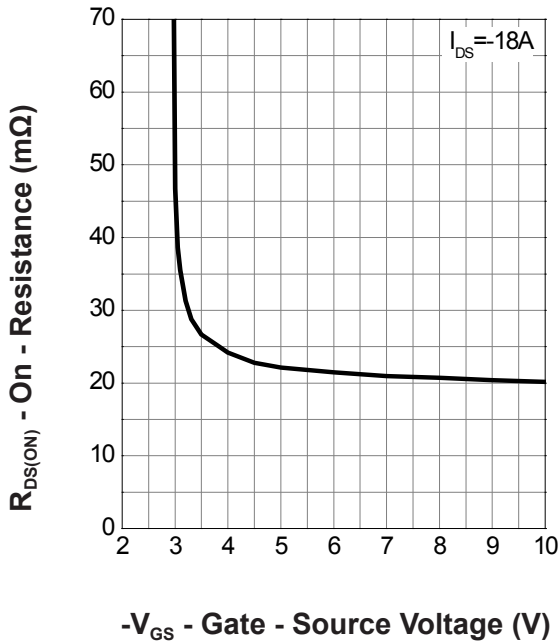


Drain-Source On Resistance

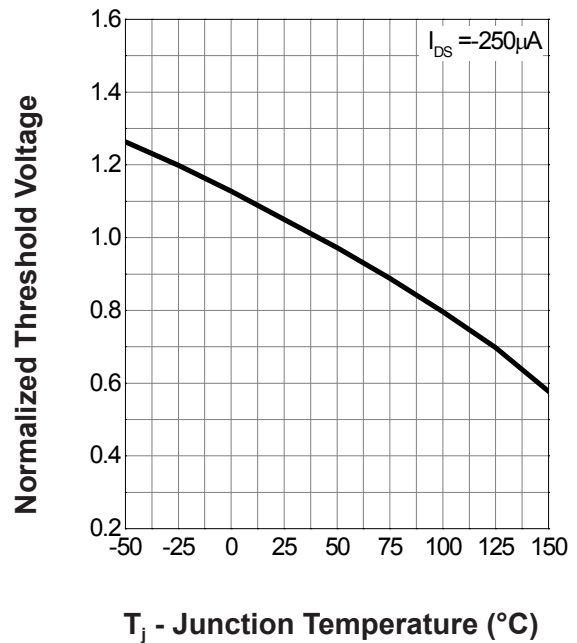


Typical Operating Characteristics

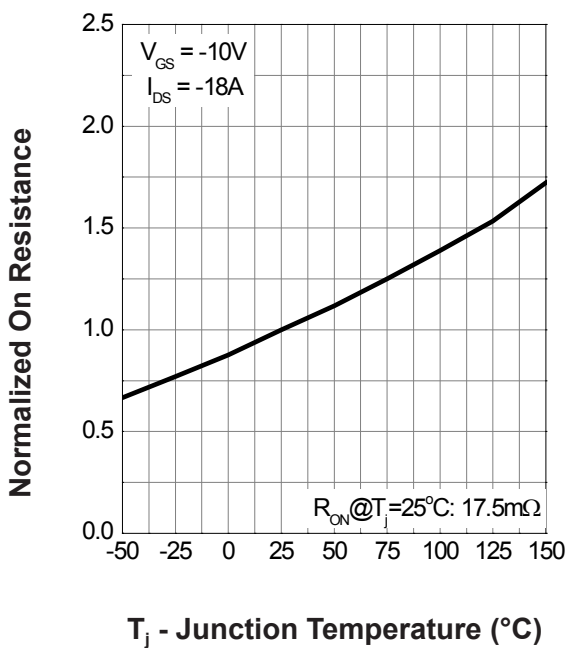
Gate-Source On Resistance



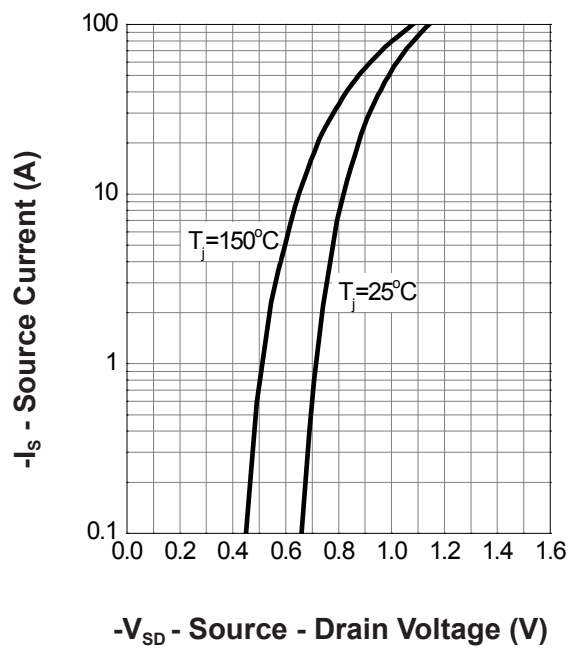
Gate Threshold Voltage



Drain-Source On Resistance

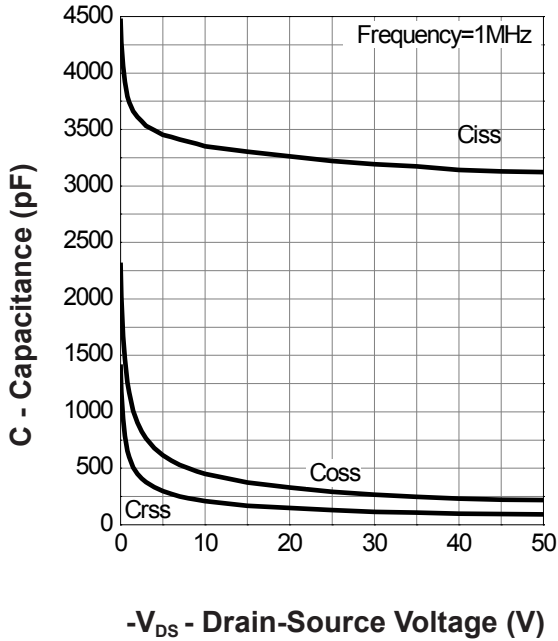


Source-Drain Diode Forward

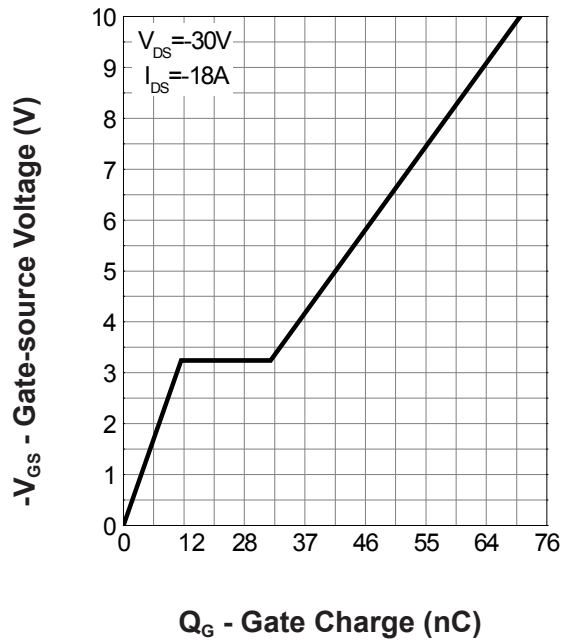


Typical Operating Characteristics

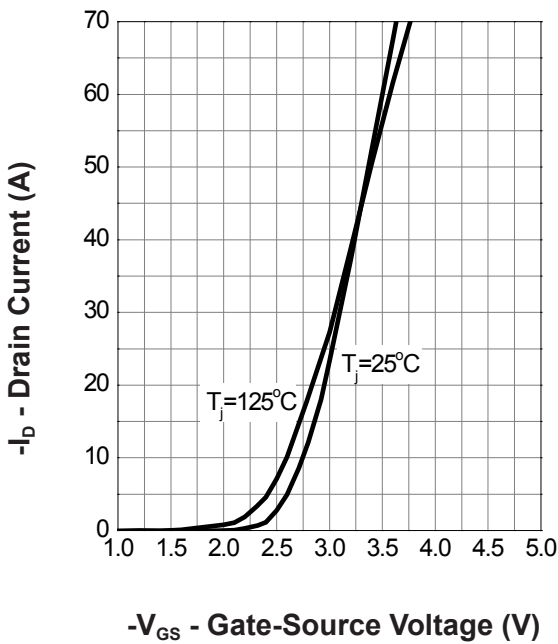
Capacitance



Gate Charge



Transfer Characteristics





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