

General Description

The WSF40P06 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 WSF40P06 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

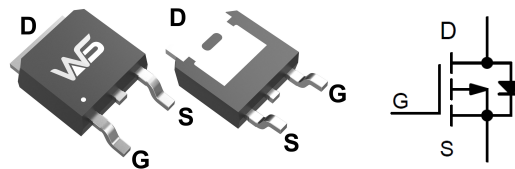
Product Summary

BVDSS	R _{DS(on)}	ID
-60V	62mΩ	-17A

Applications

- Brushless motor
- Load switch
- Uninterruptible power supply

TO-252 Pin Configuration



ABSOLUTE MAXIMUM RATINGS (T_c = 25 °C Unless Otherwise Noted)

SYMBOL	PARAMETERS/TEST CONDITIONS	LIMITS	UNIT	
V _{DS}	Drain - Source Voltage	-60	V	
V _{GS}	Gate-Source Voltage	±20		
I _D	Continuous Drain Current	T _c = 25 °C	-17	A
		T _c = 100 °C	-11	
I _{DM}	Pulsed Drain Current ₁	-60		
I _{AS}	Avalanche Current	-12		
E _{AS}	Avalanche Energy	L = 0.1mH	7.2	mJ
E _{AR}	Repetitive Avalanche Energy ₂	L = 0.05mH	3.6	
P _D	Power Dissipation	T _c = 25 °C	27	W
		T _c = 100 °C	8	
T _J , T _{stg}	Operating Junction & Storage Temperature Range	-55 to 150	°C	

THERMAL RESISTANCE RATINGS

SYMBOL	THERMAL RESISTANCE	MAXIMUM	UNIT
R _{θJC}	Junction-to-Case	4.5	°C / W
R _{θJA}	Junction-to-Ambient	85	

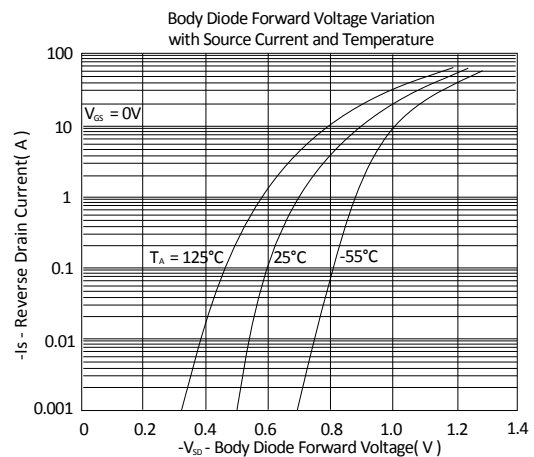
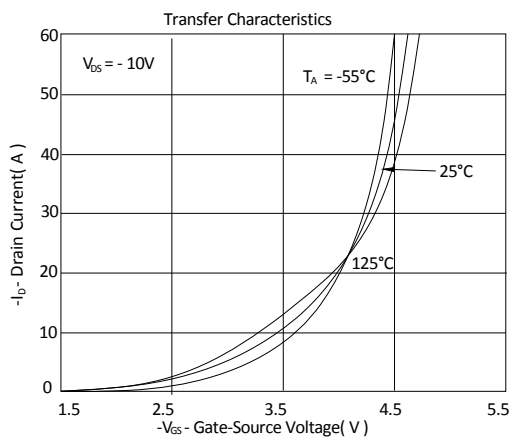
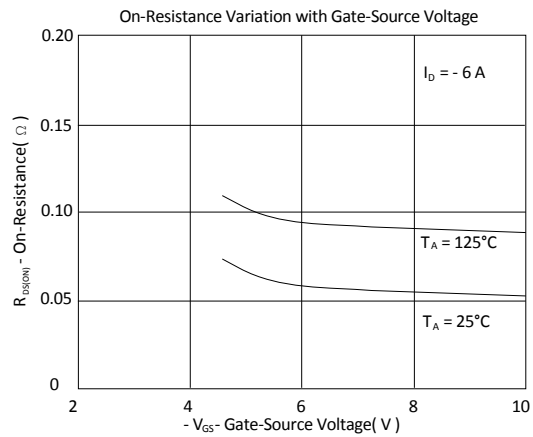
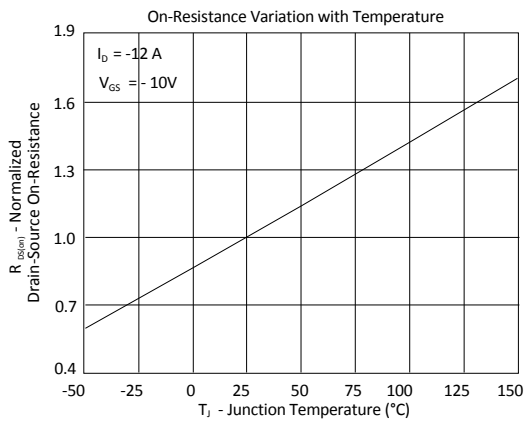
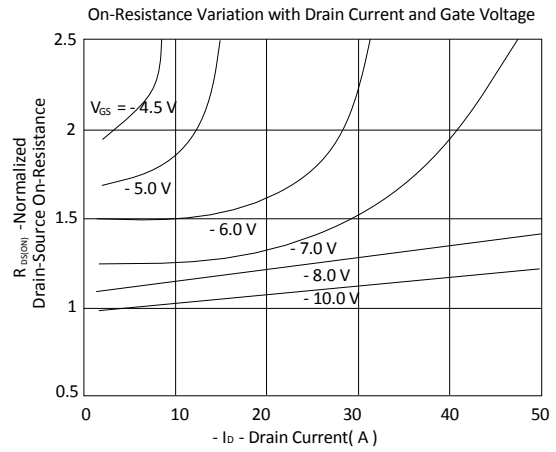
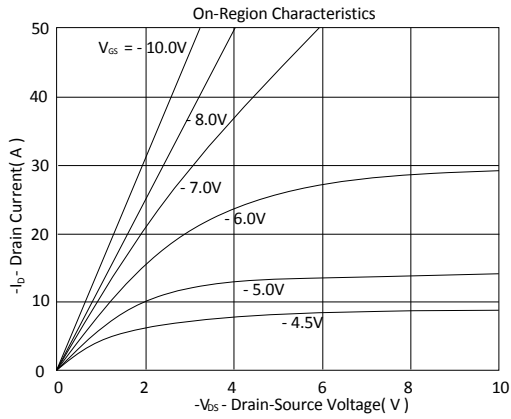
P-Channel Electrical Characteristics (T_J=25 °C, unless otherwise noted)

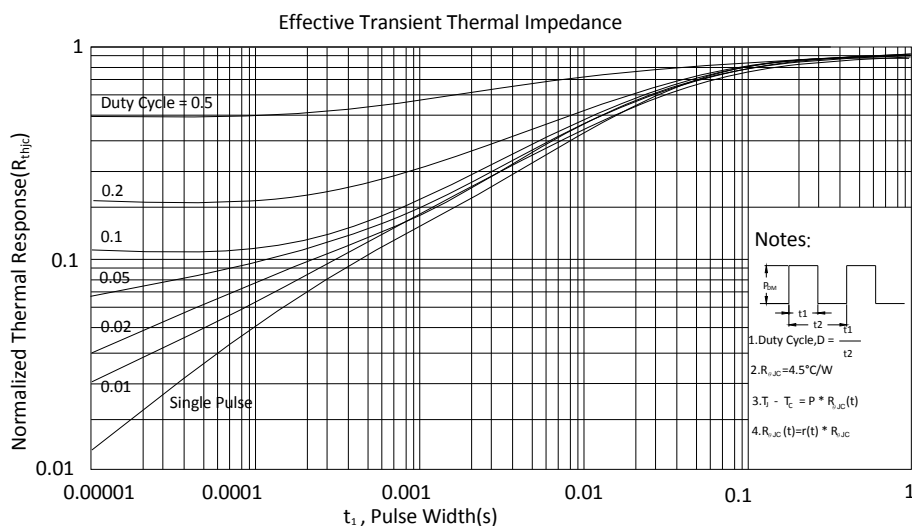
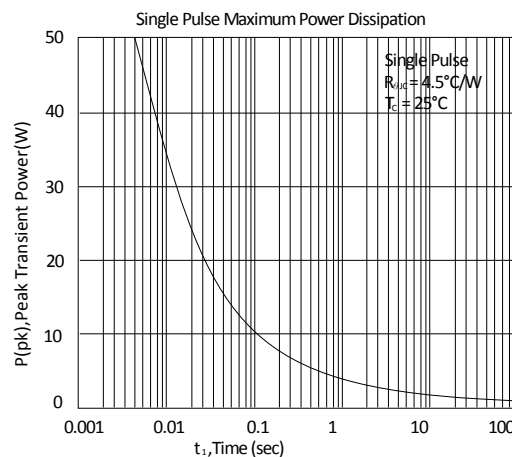
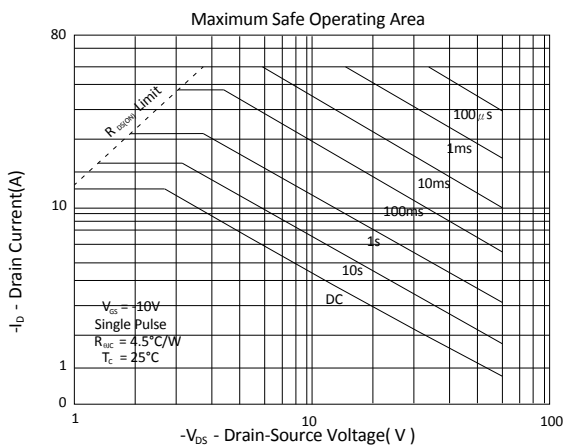
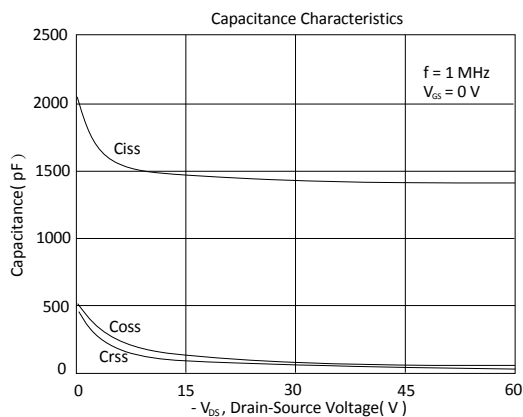
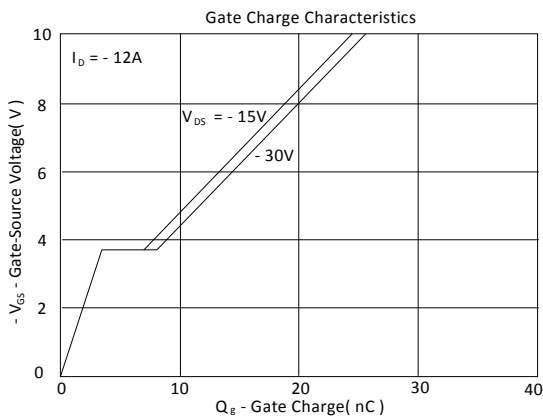
SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = - 250μA	-60	---	---	V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = - 250μA	-1.0	-1.8	-3.0	
I _{GSS}	Gate-Body Leakage	V _{DS} = 0V, V _{GS} = ±20V	---	---	±100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = -48V, V _{GS} = 0V	---	---	-1	μA
		V _{DS} = - 40V, V _{GS} = 0V, T _J = 125 °C	---	---	-25	
I _{D(ON)}	On-State Drain Current ¹	V _{DS} = -5V, V _{GS} = -4.5V	-17	---	---	A
R _{DS(ON)}	Drain-Source On-State Resistance ¹	V _{GS} = -10V, I _D = -15A	---	55	62	mΩ
		V _{GS} = -4.5V, I _D = -7A	---	75	90	
g _{fs}	Forward Transconductance ¹	V _{DS} = -5V, I _D = -15A	---	12	---	S
DYNAMIC						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = -25V, f = 1MHz	---	1485	---	pF
C _{oss}	Output Capacitance		---	93	---	
C _{rss}	Reverse Transfer Capacitance		---	81	---	
R _g	Gate Resistance	V _{GS} = 15mV, V _{DS} = 0V, f = 1MHz	---	7.0	---	Ω
Q _g	Total Gate Charge ^{1,2}	V _{DS} = -30V, V _{GS} = -10V, I _D = -10A	---	25.3	---	nC
Q _{gs}	Gate-Source Charge ^{1,2}		---	3.2	---	
Q _{gd}	Gate-Drain Charge ^{1,2}		---	4	---	
t _{d(on)}	Turn-On Delay Time ^{1,2}	V _{DS} = -10V, I _D = -1A, V _{GS} = -10V, R _{GS} = 6Ω	---	12	---	nS
t _r	Rise Time ^{1,2}		---	24	---	
t _{d(off)}	Turn-Off Delay Time ^{1,2}		---	45	---	
t _f	Fall Time ^{1,2}		---	60	---	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)						
I _S	Continuous Current		---	---	-17	A
I _{SM}	Pulsed Current ³		---	---	-60	
V _{SD}	Forward Voltage ¹	I _F = I _S , V _{GS} = 0V	---	---	1.3	V
t _{rr}	Reverse Recovery Time	I _F = - 5A, dI _F /dt = 100A/μS	---	12	---	nS
Q _{rr}	Reverse Recovery Charge		---	9	---	nC

¹Pulse test : Pulse Width ≤ 300μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

TYPICAL CHARACTERISTICS







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