General Description

The WSF40P06 is the highest performance trench P-ch MOSFETs with extreme high cell density , which provide excellent RDSON 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

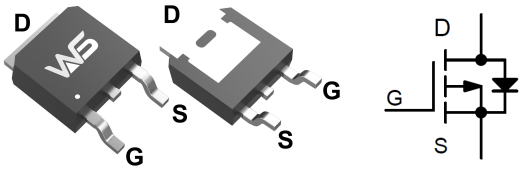
Product Summery

BVDSS	RDSON	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
$R_{\theta JC}$	Junction-to-Case	4.5	°C / W
$R_{\theta JA}$	Junction-to-Ambient	85	

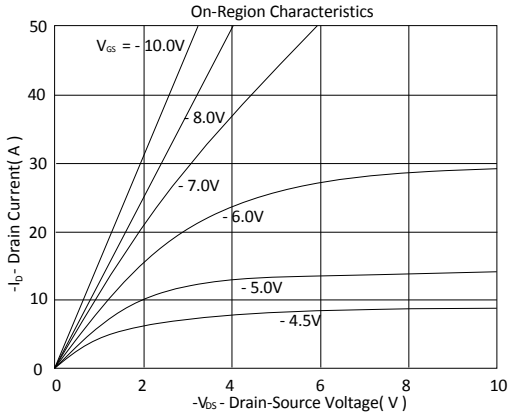
P-Channel Electrical Characteristics (T_J=25 ℃, unless otherwise noted)

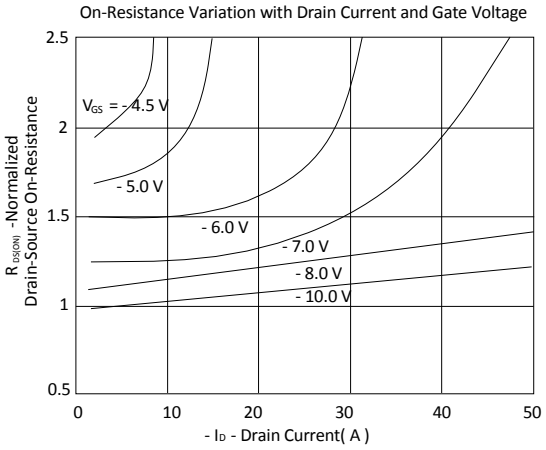
SYMBOL	PARAMETER	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = －250μA	-60	---	---	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = －250μA	-1.0	-1.8	-3.0	
I_{GSS}	Gate-Body Leakage	V_{DS} = 0V, V_{GS} = ±20V	---	---	±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

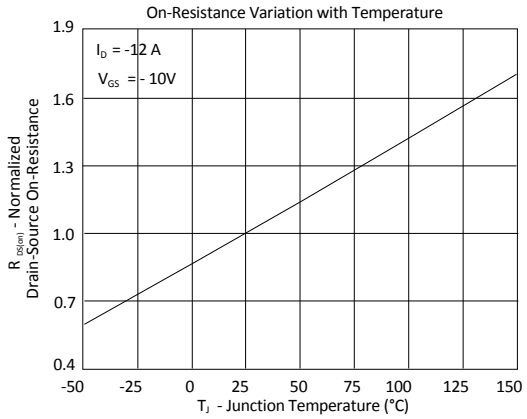
[1]Pulse test : Pulse Width≤300μsec, Duty Cycle≤ 2%.

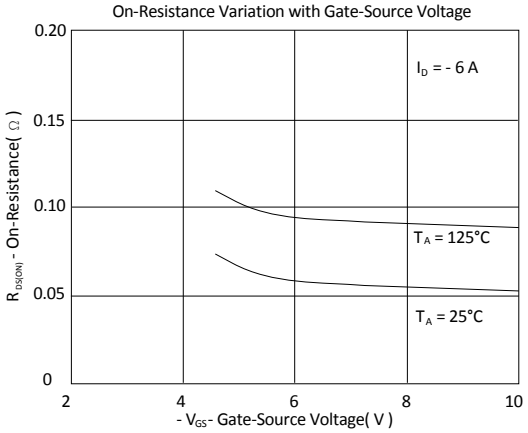
[2]Independent of operating temperature.

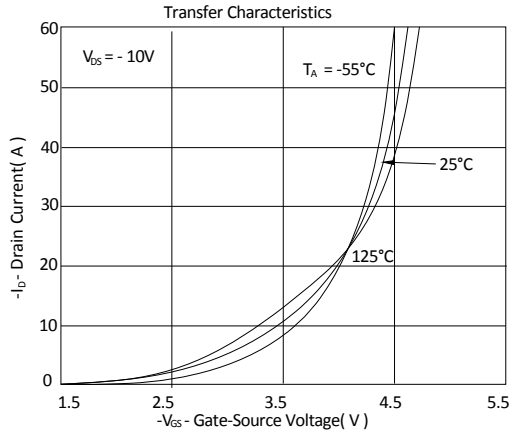
TYPICAL CHARACTERISTICS

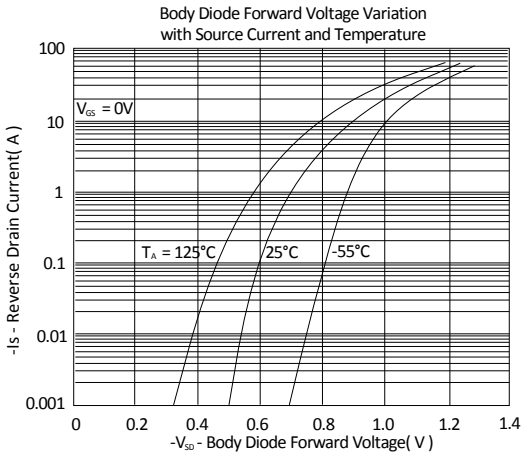




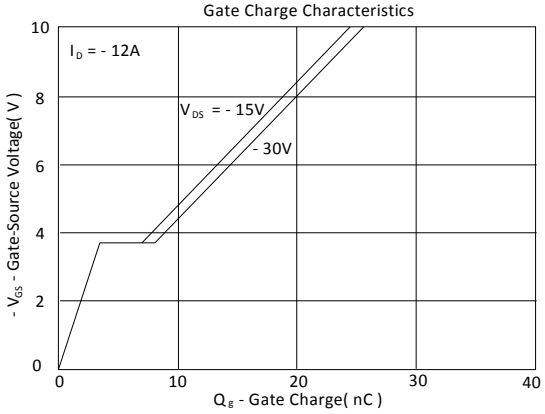




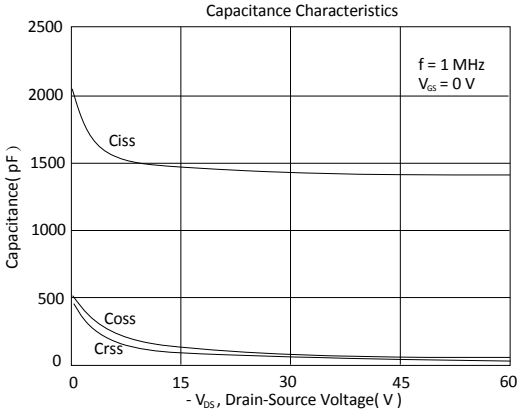




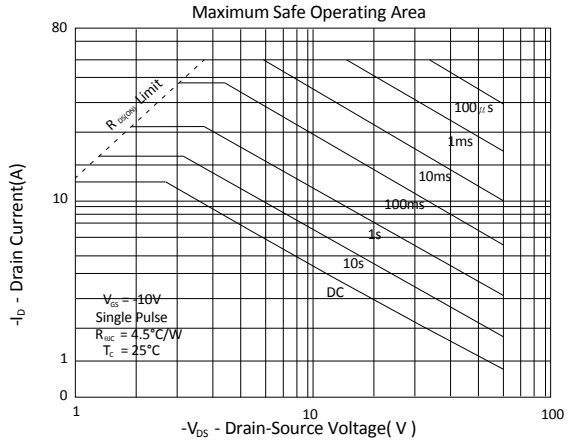
Gate Charge Characteristics



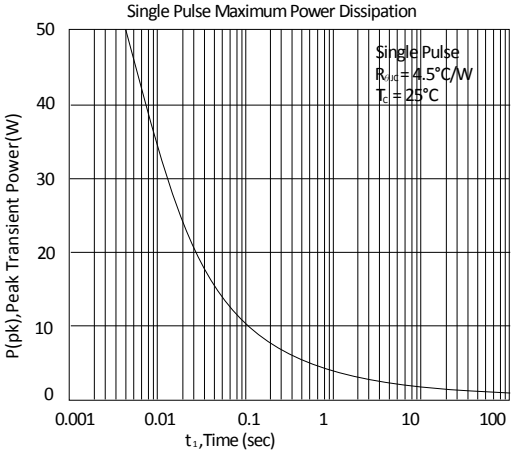
Capacitance Characteristics



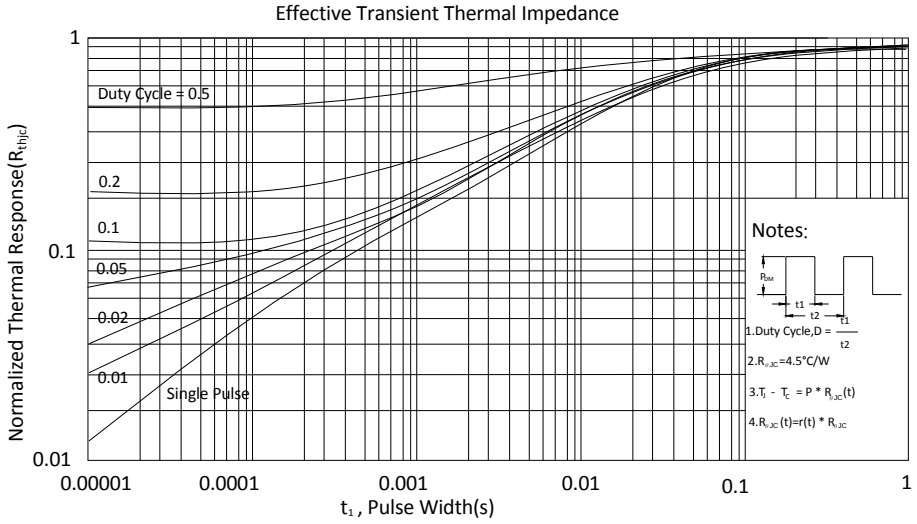
Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Effective Transient Thermal Impedance



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