20V N-MOS

Features

$R_{DS(ON)}$<360mΩ @V_{GS}=4.5V
$R_{DS(ON)}$<420mΩ @V_{GS}=2.5V
$R_{DS(ON)}$<560mΩ @V_{GS}=1.8V
Low Offset (Error) Voltage
Low-Voltage Operation
High-Speed Circuits
Low Battery Voltage Operation
FBP1006-3 package design

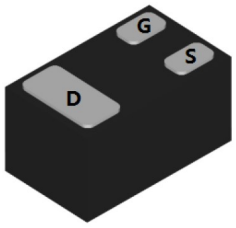
APPLICATIONS

Drivers: Relays, Solenoids, Lamps, Hammers, Displays, Memories
Battery Operated Systems
Power Supply Converter Circuits
Load/Power Switching Smart Phones, Pagers

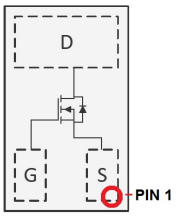
General Description

FS2022, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent $R_{DS(ON)}$, low gate charge.
These devices are particularly suited for low voltage power management, such as smart phone and notebook computer, and low in-line power loss are needed in commercial industrial surface mount applications.

Pin Configurations



FBP1006-3



Pin configuration（Top view）

Absolute Maximum Ratings @T_A=25℃ unless otherwise noted

Parameter	Symbol	Ratings	Unit
Drain - Source Voltage	V_{DSS}	20	V
Gate –Source Voltage	V_{GS}	±12	V
Drain Current (Continuous)	I_D	0.70	A
Drain Current (Pulse)	I_{DP}	1.0	A
Power Dissipation	P_D	0.27	W
Operating Temperature	T_J	-55~150	℃
Storage Temperature	T_{STG}	-55~150	℃

● **Electrical Characteristics** @T_A=25℃ unless otherwise noted

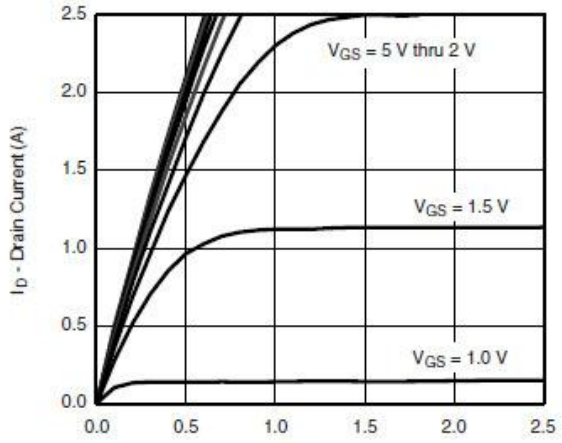
Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= 250μA	20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D= 250μA	0.4		1.0	
I_{GSS}	Gate Leakage Current	V_{DS}=0V, V_{GS}=±12V			±0.1	μA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}= 20V, V_{GS}=0V			1	
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}= 4.5V, I_D= 0.8A		300	360	mΩ
		V_{GS}= 2.5V, I_D= 0.7A		340	420	
		V_{GS}= 1.8V, I_D= 0.6A		420	560	
G_{FS}	Forward Transconductance	V_{DS}= 10V, I_D= 0.4A		1.0		S
V_{SD}	Diode Forward Voltage	I_S= 0.15A, V_{GS}=0V		0.65	1.2	V
DYNAMIC						
$Q_{g(TOT)}$	Total Gate Charge	V_{DS}= 10V, V_{GS}= 4.5V, I_D= 0.6A		1.06		nC
Q_{gs}	Gate-Source Charge			0.18		
Q_{gd}	Gate-Drain Charge			0.32		
C_{iss}	Input Capacitance	V_{DS}= 10V, V_{GS}= 0V, f=1MHz		70		pF
C_{oss}	Output Capacitance			20		
C_{rss}	Reverse Transfer Capacitance			8		
$t_{d(on)}$	Turn-On Delay Time	V_{DS}= 10V, R_G =1Ω I_D=0.5A, V_{GS}= 4.5V,RL=20Ω		18	26	ns
t_r	Rise Time			20	28	
$t_{d(off)}$	Turn-Off Delay Time			70	110	
t_f	Fall Time			25	40	

Notes:

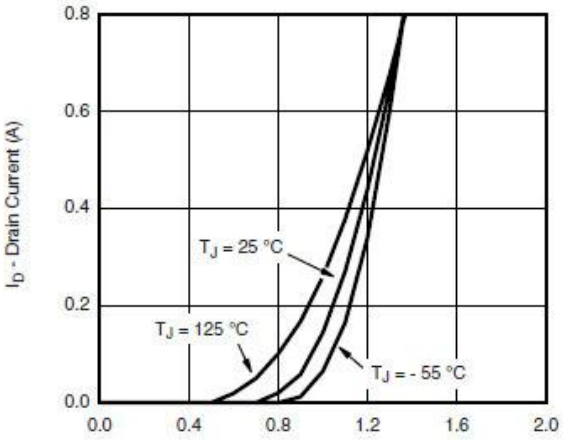
1. Pulse width limited by maximum junction temperature. Pulse test: PW≤300μs, duty cycle≤2%.

2. For design AID only, not subject to production testing. Switching time is essentially independent of operating temperature.

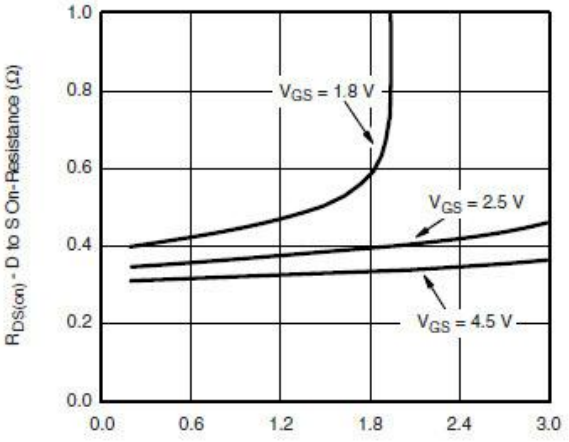
- **Typical Performance Characteristics**



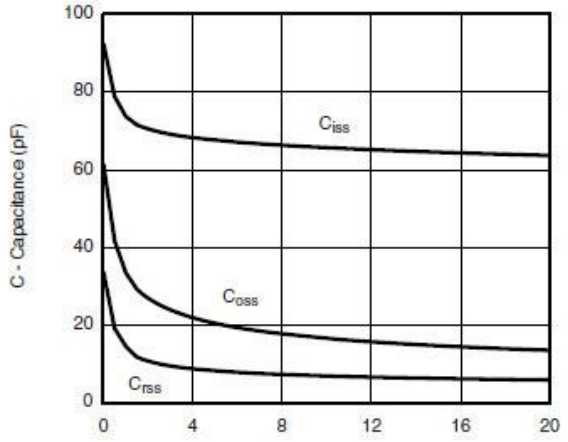
Output Characteristics



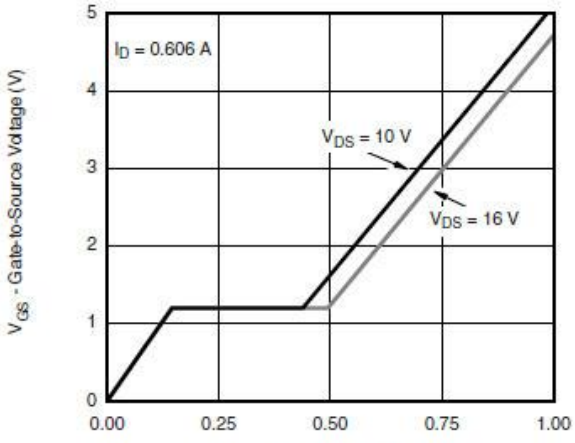
Transfer Characteristics



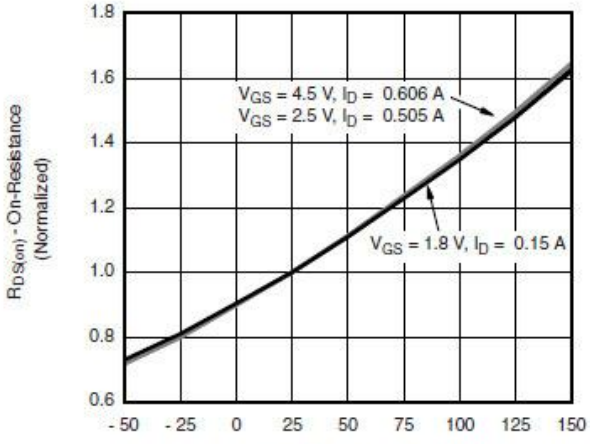
On-Resistance vs. Drain Current



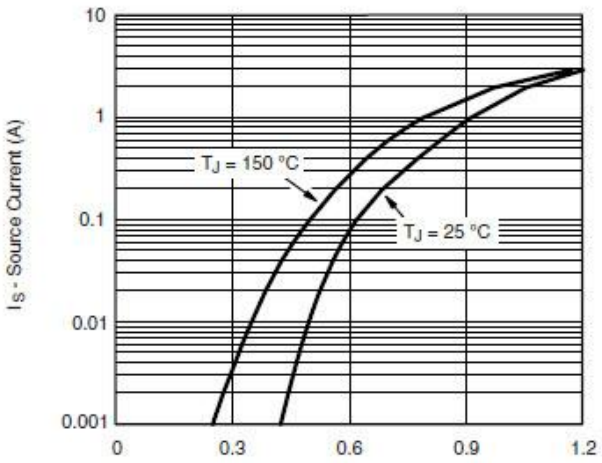
Capacitance



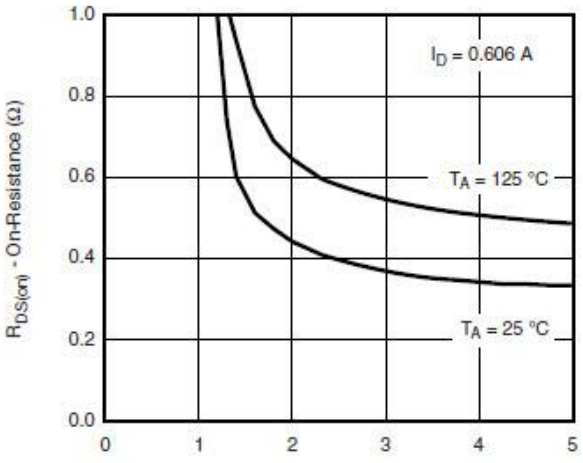
Gate Charge



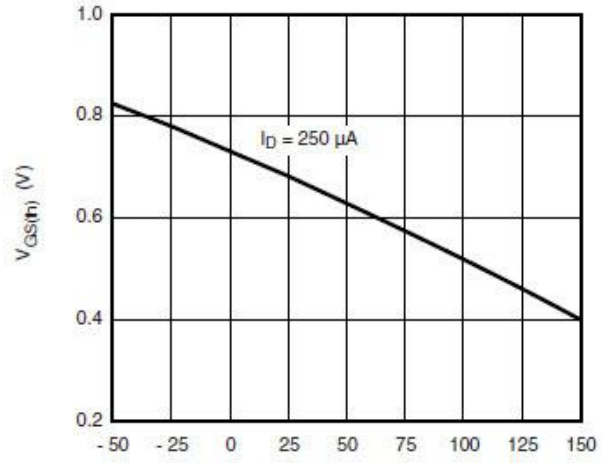
On-Resistance vs. Junction Temperature



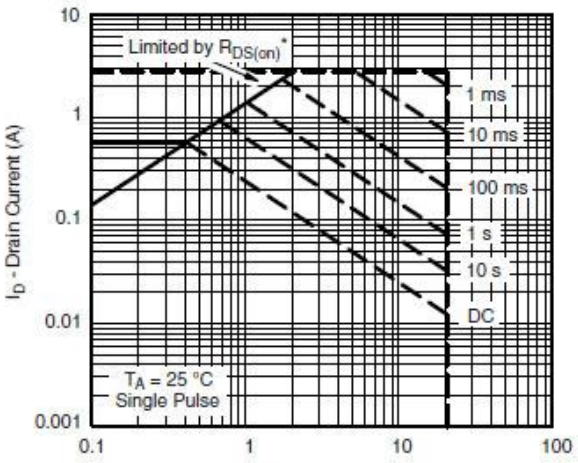
Source-Drain Diode Forward Voltage



$R_{DS(on)}$ vs. V_{GS} vs Temperature

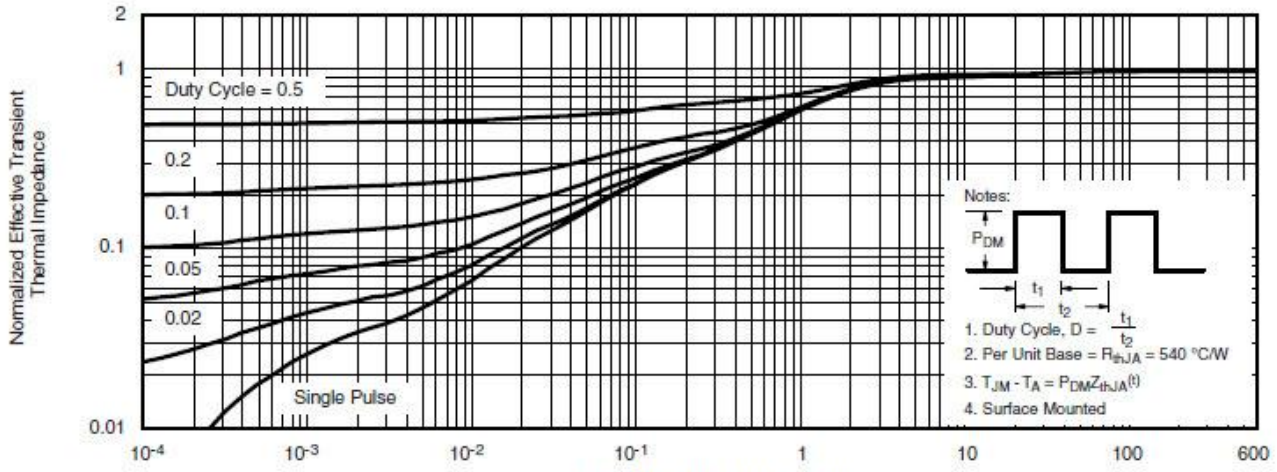


Threshold Voltage



* V_{GS} > minimum V_{GS} at which $R_{DS(on)}$ is specified

Safe Operating Area, Junction-to-Ambient



Normalized Thermal Transient Impedance, Junction-to-Ambient

- **Package Information (FBP1006-3)**

WBFBP-03E
(1.0×0.6×0.5)