


**PRELIMINARY**  
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MITSUBISHI Nch POWER MOSFET

# FY6BCH-02

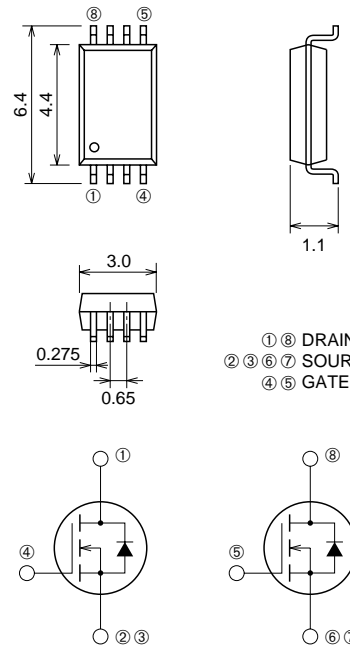
HIGH-SPEED SWITCHING USE

**FY6BCH-02**



- 2.5V DRIVE
- V<sub>DSS</sub> ..... 20V
- r<sub>DS</sub> (ON) (MAX) ..... 30mΩ
- I<sub>D</sub> ..... 6A

**OUTLINE DRAWING** Dimensions in mm



① ⑧ DRAIN  
 ② ③ ⑥ ⑦ SOURCE  
 ④ ⑤ GATE

**TSSOP8**

## APPLICATION

Motor control, Lamp control, Solenoid control  
 DC-DC converter, etc.

## MAXIMUM RATINGS (T<sub>c</sub> = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V <sub>DSS</sub>	Drain-source voltage	V <sub>GS</sub> = 0V	20	V
V <sub>GSS</sub>	Gate-source voltage	V <sub>DS</sub> = 0V	±10	V
I <sub>D</sub>	Drain current		6	A
I <sub>DM</sub>	Drain current (Pulsed)		42	A
I <sub>DA</sub>	Avalanche drain current (Pulsed)	L = 10μH	6	A
I <sub>S</sub>	Source current		1.5	A
I <sub>SM</sub>	Source current (Pulsed)		6.0	A
P <sub>D</sub>	Maximum power dissipation		1.5	W
T <sub>ch</sub>	Channel temperature		-55 ~ +150	°C
T <sub>stg</sub>	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	0.035	g

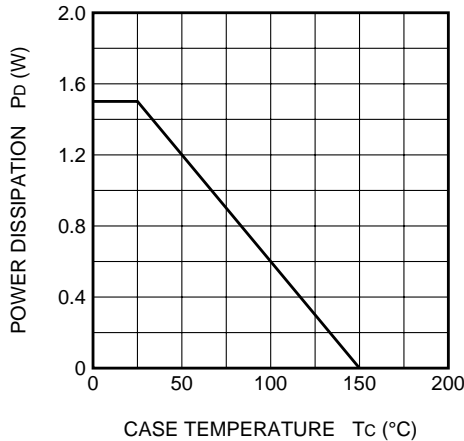
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**ELECTRICAL CHARACTERISTICS** (Tch = 25°C)

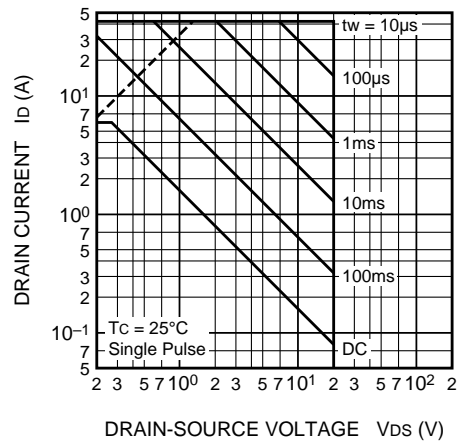
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	ID = 1mA, VGS = 0V	20	—	—	V
IGSS	Gate-source leakage current	VGS = ±10V, VDS = 0V	—	—	±0.1	μA
IDSS	Drain-source leakage current	VDS = 20V, VGS = 0V	—	—	0.1	mA
VGS (th)	Gate-source threshold voltage	ID = 1mA, VDS = 10V	0.5	0.9	1.3	V
rDS (ON)	Drain-source on-state resistance	ID = 6A, VGS = 4V	—	25	30	mΩ
rDS (ON)	Drain-source on-state resistance	ID = 3A, VGS = 2.5V	—	32	40	mΩ
VDS (ON)	Drain-source on-state voltage	ID = 6A, VGS = 4V	—	0.15	0.18	V
yfs	Forward transfer admittance	ID = 6A, VDS = 10V	—	13.0	—	S
Ciss	Input capacitance	VDS = 10V, VGS = 0V, f = 1MHz	—	800	—	pF
Coss	Output capacitance		—	280	—	pF
Crss	Reverse transfer capacitance		—	200	—	pF
td (on)	Turn-on delay time	VDD = 10V, ID = 3A, VGS = 4V, RGEN = RGS = 50Ω	—	20	—	ns
tr	Rise time		—	55	—	ns
td (off)	Turn-off delay time		—	90	—	ns
tf	Fall time		—	100	—	ns
VSD	Source-drain voltage	IS = 1.5A, VGS = 0V	—	—	1.10	V
Rth (ch-a)	Thermal resistance	Channel to ambient	—	—	83.3	°C/W
trr	Reverse recovery time	IS = 1.5A, dis/dt = -50A/μs	—	50	—	ns

**PERFORMANCE CURVES**

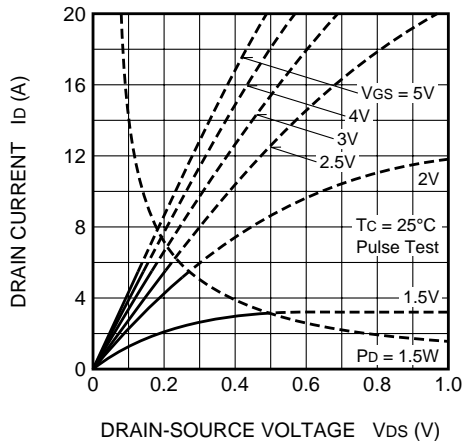
**POWER DISSIPATION DERATING CURVE**



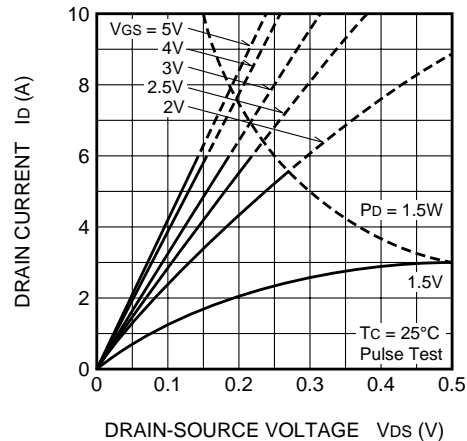
**MAXIMUM SAFE OPERATING AREA**



**OUTPUT CHARACTERISTICS (TYPICAL)**

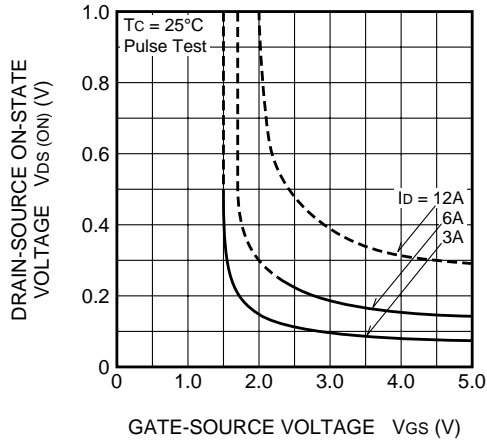


**OUTPUT CHARACTERISTICS (TYPICAL)**

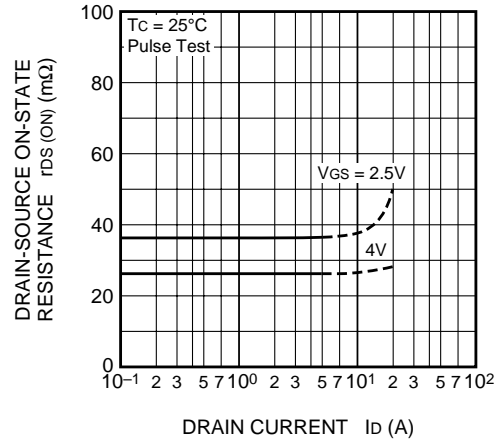


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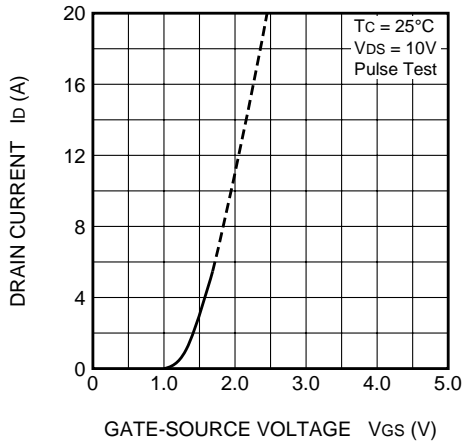
**ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)**



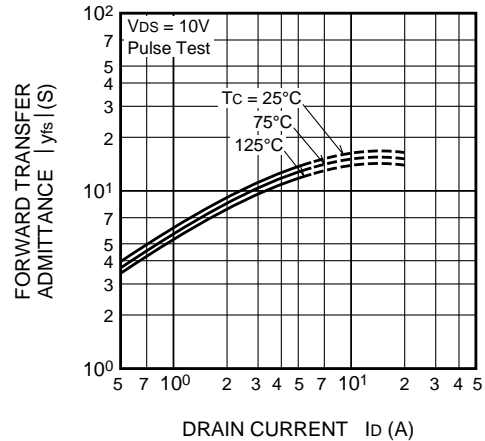
**ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)**



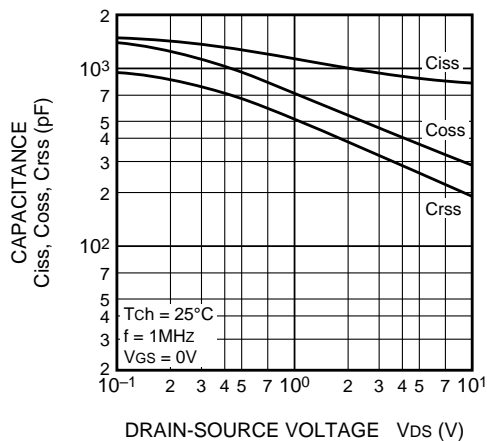
**TRANSFER CHARACTERISTICS (TYPICAL)**



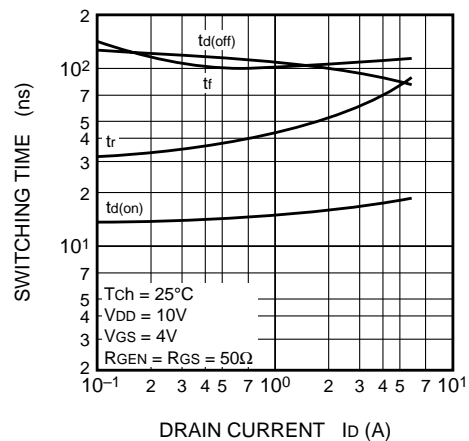
**FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)**



**CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)**

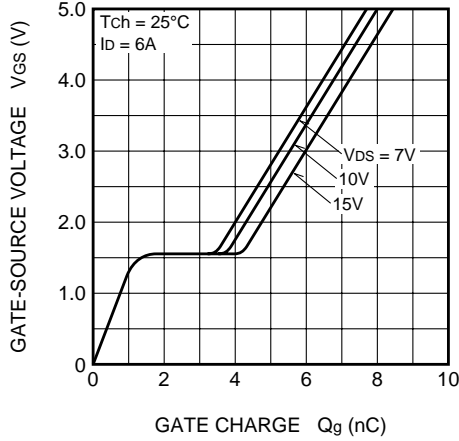


**SWITCHING CHARACTERISTICS (TYPICAL)**

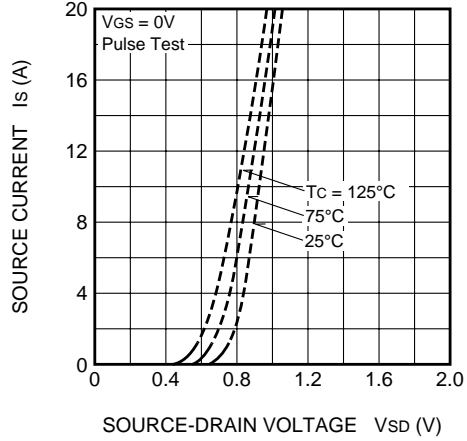


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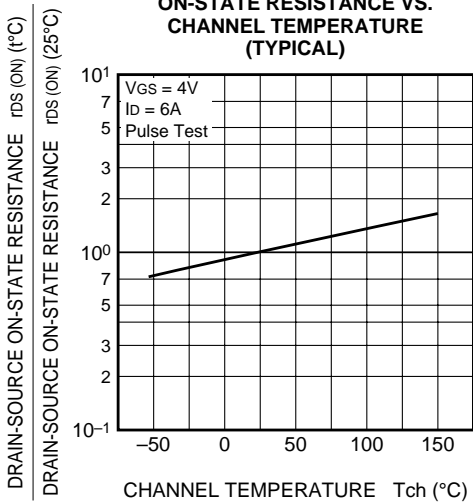
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



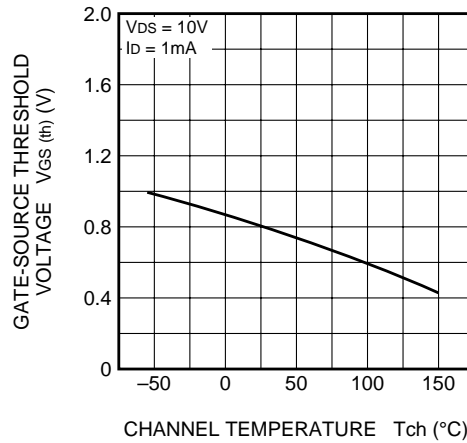
**SOURCE-DRAIN DIODE FORWARD CHARACTERISTICS (TYPICAL)**



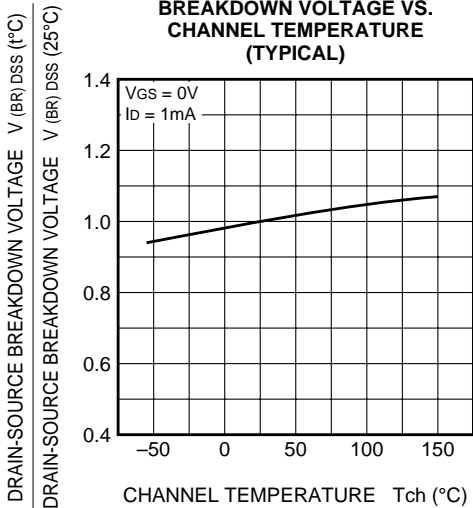
**ON-STATE RESISTANCE VS. CHANNEL TEMPERATURE (TYPICAL)**



**THRESHOLD VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)**



**BREAKDOWN VOLTAGE VS. CHANNEL TEMPERATURE (TYPICAL)**



**TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS**

