

PRELIMINARY
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 Some parametric limits are subject to change.

MITSUBISHI Nch POWER MOSFET

FY6BCH-02

HIGH-SPEED SWITCHING USE

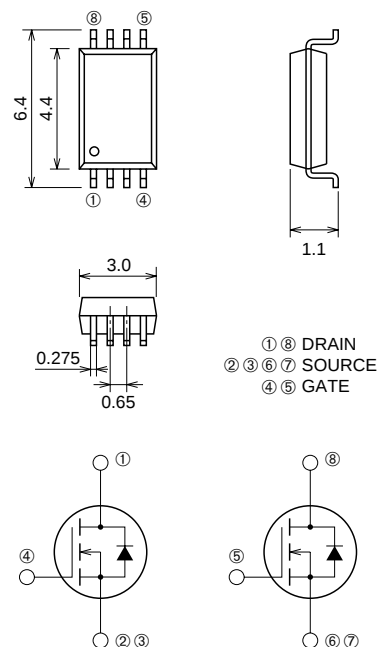
FY6BCH-02



- 2.5V DRIVE
- V_{DS} 20V
- $r_{DS(ON)}$ (MAX) 30m Ω
- I_D 6A

OUTLINE DRAWING

Dimensions in mm



TSSOP8

APPLICATION

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

MAXIMUM RATINGS (T_c = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	20	V
V_{GS}	Gate-source voltage	$V_{DS} = 0V$	± 10	V
I_D	Drain current		6	A
I_{DM}	Drain current (Pulsed)		42	A
I_{DA}	Avalanche drain current (Pulsed)	$L = 10\mu H$	6	A
I_S	Source current		1.5	A
I_{SM}	Source current (Pulsed)		6.0	A
P_D	Maximum power dissipation		1.5	W
T_{ch}	Channel temperature		-55 ~ +150	°C
T_{stg}	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	0.035	g

Sep.1998

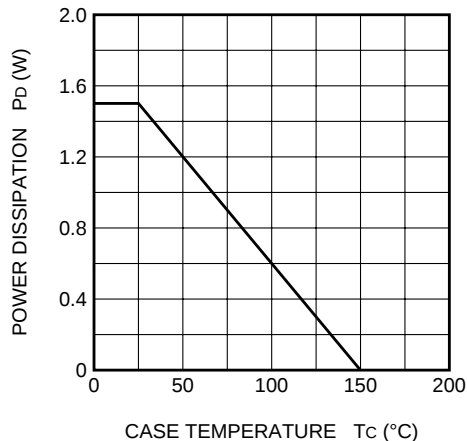
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ELECTRICAL CHARACTERISTICS ($T_{ch} = 25^{\circ}\text{C}$)

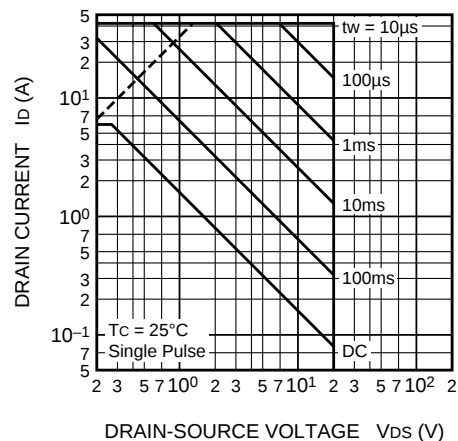
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-source breakdown voltage	$I_D = 1\text{mA}$, $V_{GS} = 0\text{V}$	20	—	—	V
I_{GSS}	Gate-source leakage current	$V_{GS} = \pm 10\text{V}$, $V_{DS} = 0\text{V}$	—	—	± 0.1	μA
I_{DSS}	Drain-source leakage current	$V_{DS} = 20\text{V}$, $V_{GS} = 0\text{V}$	—	—	0.1	mA
$V_{GS(th)}$	Gate-source threshold voltage	$I_D = 1\text{mA}$, $V_{DS} = 10\text{V}$	0.5	0.9	1.3	V
$r_{DS(on)}$	Drain-source on-state resistance	$I_D = 6\text{A}$, $V_{GS} = 4\text{V}$	—	25	30	$\text{m}\Omega$
$r_{DS(on)}$	Drain-source on-state resistance	$I_D = 3\text{A}$, $V_{GS} = 2.5\text{V}$	—	32	40	$\text{m}\Omega$
$V_{DS(on)}$	Drain-source on-state voltage	$I_D = 6\text{A}$, $V_{GS} = 4\text{V}$	—	0.15	0.18	V
$ y_{fs} $	Forward transfer admittance	$I_D = 6\text{A}$, $V_{DS} = 10\text{V}$	—	13.0	—	S
C_{iss}	Input capacitance	$V_{DS} = 10\text{V}$, $V_{GS} = 0\text{V}$, $f = 1\text{MHz}$	—	800	—	pF
C_{oss}	Output capacitance		—	280	—	pF
C_{rss}	Reverse transfer capacitance		—	200	—	pF
$t_d(on)$	Turn-on delay time	$V_{DD} = 10\text{V}$, $I_D = 3\text{A}$, $V_{GS} = 4\text{V}$, $R_{GEN} = R_{GS} = 50\Omega$	—	20	—	ns
t_r	Rise time		—	55	—	ns
$t_d(off)$	Turn-off delay time		—	90	—	ns
t_f	Fall time		—	100	—	ns
V_{SD}	Source-drain voltage	$I_S = 1.5\text{A}$, $V_{GS} = 0\text{V}$	—	—	1.10	V
$R_{th(ch-a)}$	Thermal resistance	Channel to ambient	—	—	83.3	$^{\circ}\text{C/W}$
t_{rr}	Reverse recovery time	$I_S = 1.5\text{A}$, $di/dt = -50\text{A}/\mu\text{s}$	—	50	—	ns

PERFORMANCE CURVES

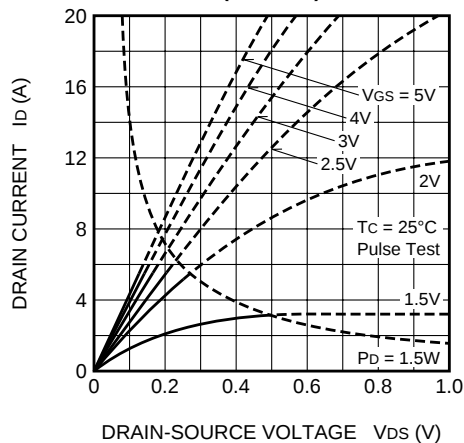
POWER DISSIPATION DERATING CURVE



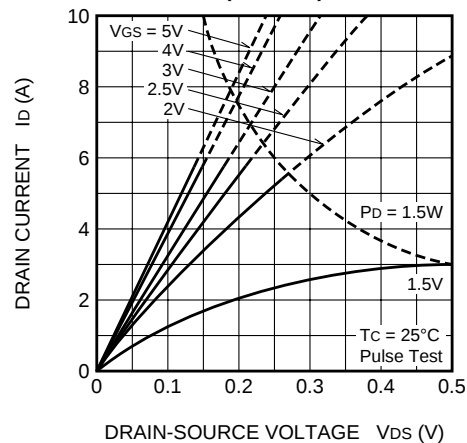
MAXIMUM SAFE OPERATING AREA



OUTPUT CHARACTERISTICS (TYPICAL)

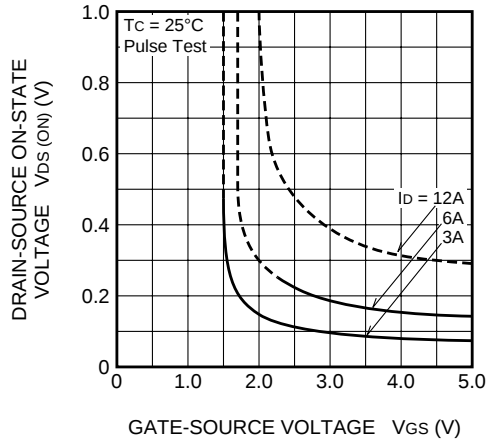


OUTPUT CHARACTERISTICS (TYPICAL)

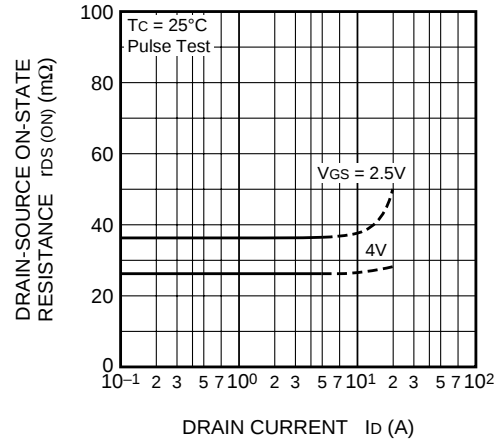


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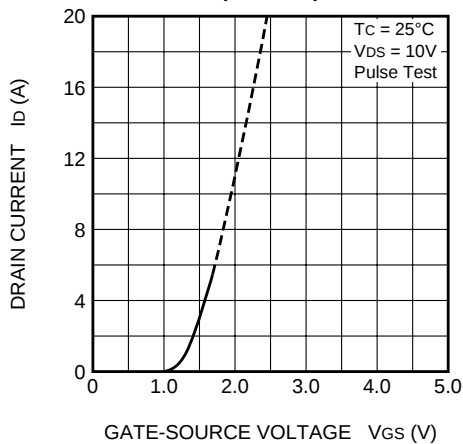
**ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)**



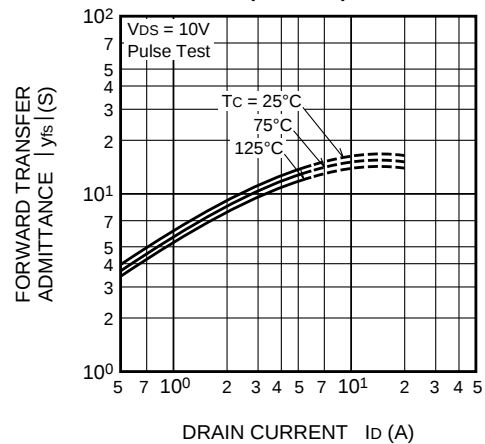
**ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)**



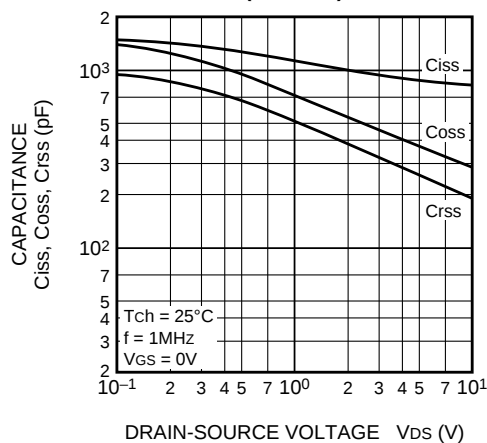
**TRANSFER CHARACTERISTICS
(TYPICAL)**



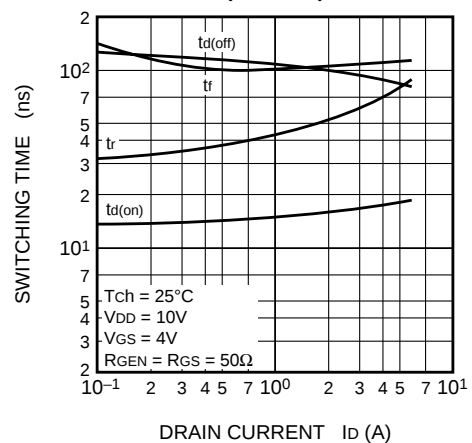
**FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)**



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



**SWITCHING CHARACTERISTICS
(TYPICAL)**



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