

FY7BFH-02E

HIGH-SPEED SWITCHING USE

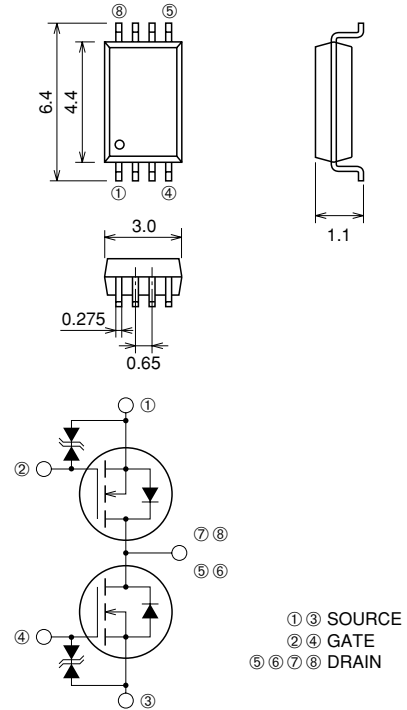
FY7BFH-02E



- 2.5V DRIVE
- V_{DS} 20V
- $r_{DS(ON)}(MAX)$ 30m Ω
- I_D 7A

OUTLINE DRAWING

Dimensions in mm



TSSOP8

APPLICATION

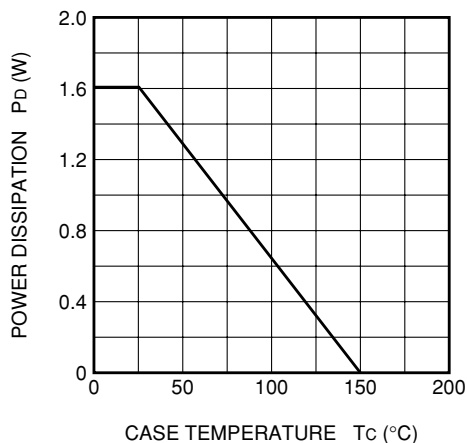
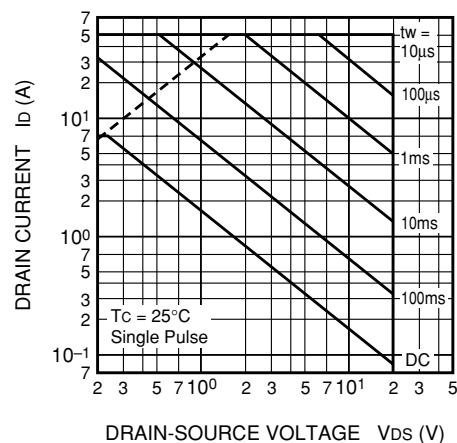
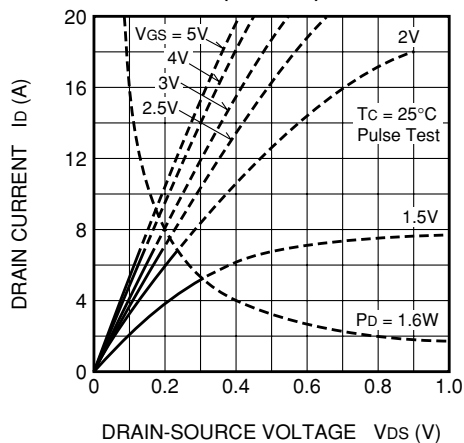
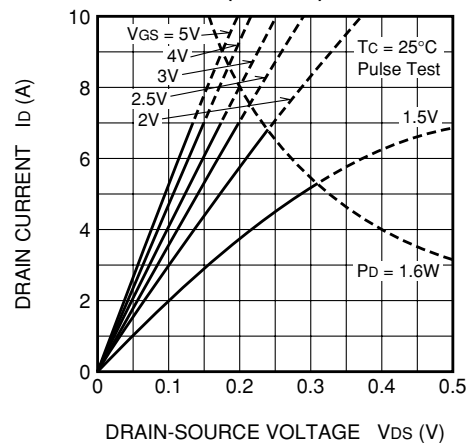
Li - ion battery, etc.

MAXIMUM RATINGS (T_c = 25°C)

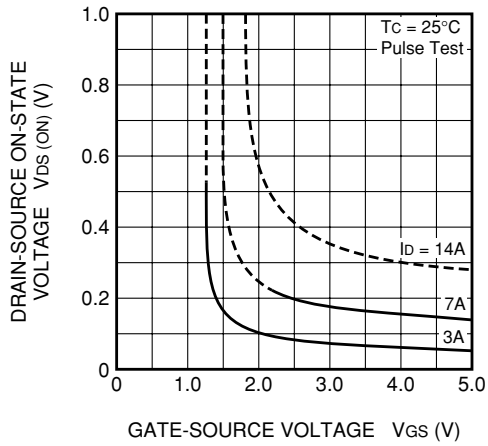
Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	20	V
V_{GS}	Gate-source voltage	$V_{DS} = 0V$	± 10	V
I_D	Drain current		7	A
I_{DM}	Drain current (Pulsed)		49	A
I_{DA}	Avalanche current (Pulsed)	$L = 10\mu H$	7	A
I_S	Source current		1.8	A
I_{SM}	Source current (Pulsed)		7.2	A
P_D	Maximum power dissipation		1.6	W
T_{ch}	Channel temperature		-55 ~ +150	°C
T_{stg}	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	0.035	g

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

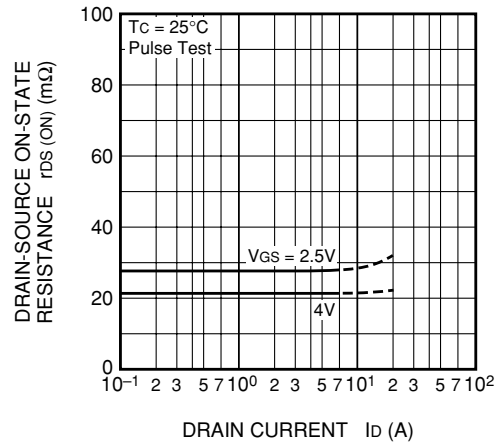
Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
$V_{(BR)DSS}$	Drain-source breakdown voltage	$I_D = 1\text{mA}$, $V_{GS} = 0\text{V}$	20	—	—	V
$V_{(BR)GSS}$	Gate-source breakdown voltage	$I_G = \pm 100\mu\text{A}$, $V_{DS} = 0\text{V}$	± 10	—	—	V
I_{GSS}	Gate-source leakage current	$V_{GS} = \pm 10\text{V}$, $V_{DS} = 0\text{V}$	—	—	± 10	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	$I_D = 7\text{A}$, $V_{GS} = 4\text{V}$	—	23	30	$\text{m}\Omega$
$r_{DS(on)}$	Drain-source on-state resistance	$I_D = 3.5\text{A}$, $V_{GS} = 2.5\text{V}$	—	30	40	$\text{m}\Omega$
$V_{DS(on)}$	Drain-source on-state voltage	$I_D = 7\text{A}$, $V_{GS} = 4\text{V}$	—	0.161	0.210	V
$ y_{fs} $	Forward transfer admittance	$I_D = 7\text{A}$, $V_{DS} = 10\text{V}$	—	16	—	S
C_{iss}	Input capacitance	$V_{DS} = 10\text{V}$, $V_{GS} = 0\text{V}$, $f = 1\text{MHz}$	—	1400	—	pF
C_{oss}	Output capacitance		—	520	—	pF
C_{rss}	Reverse transfer capacitance		—	400	—	pF
$t_d(\text{on})$	Turn-on delay time	$V_{DD} = 10\text{V}$, $I_D = 3.5\text{A}$, $V_{GS} = 4\text{V}$, $R_{GEN} = R_{GS} = 50\Omega$	—	30	—	ns
t_r	Rise time		—	100	—	ns
$t_d(\text{off})$	Turn-off delay time		—	190	—	ns
t_f	Fall time		—	190	—	ns
V_{SD}	Source-drain voltage	$I_S = 1.8\text{A}$, $V_{GS} = 0\text{V}$	—	0.85	1.1	V
$R_{th(ch-a)}$	Thermal resistance	Channel to ambient	—	—	78.1	$^{\circ}\text{C/W}$
t_{rr}	Reverse recovery time	$I_S = 1.8\text{A}$, $\text{dis}/\text{dt} = -50\text{A}/\mu\text{s}$	—	50	—	ns

PERFORMANCE CURVES**POWER DISSIPATION DERATING CURVE****MAXIMUM SAFE OPERATING AREA****OUTPUT CHARACTERISTICS (TYPICAL)****OUTPUT CHARACTERISTICS (TYPICAL)**

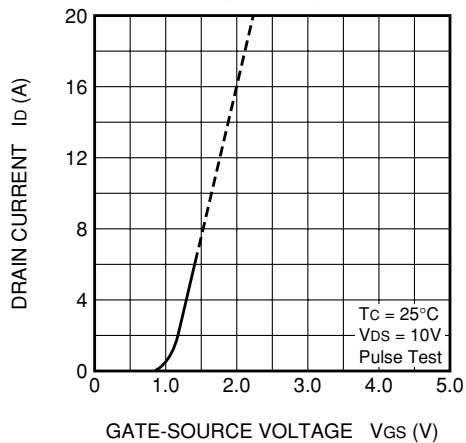
**ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)**



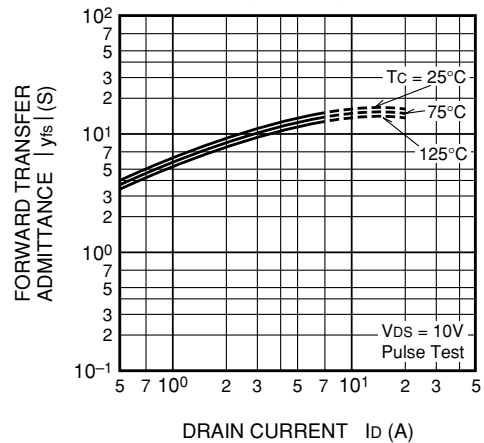
**ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)**



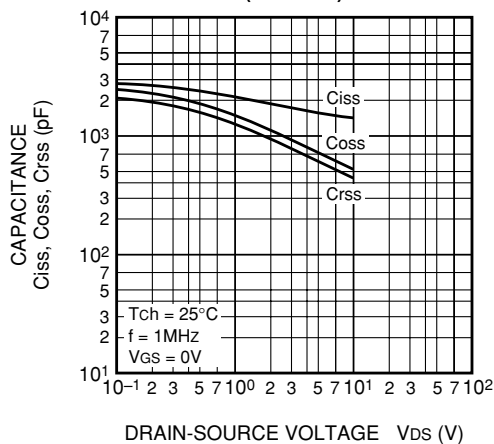
**TRANSFER CHARACTERISTICS
(TYPICAL)**



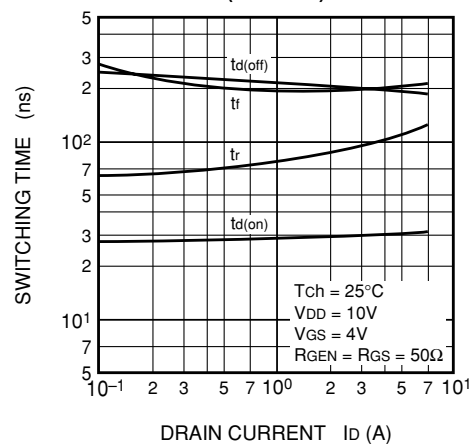
**FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)**



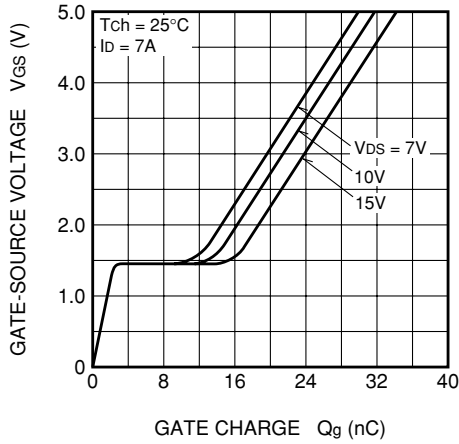
**CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)**



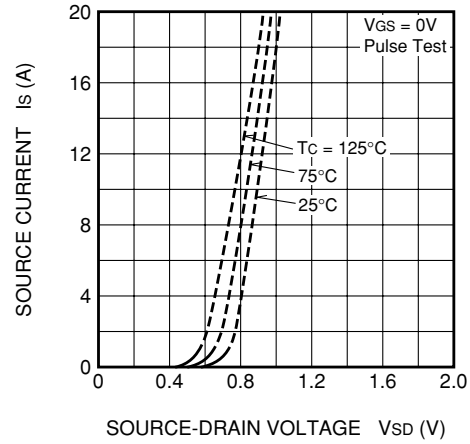
**SWITCHING CHARACTERISTICS
(TYPICAL)**



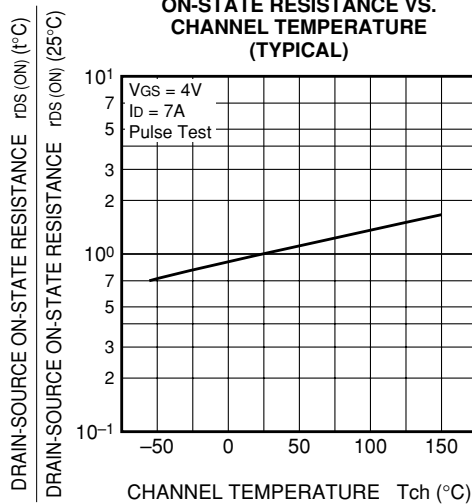
GATE-SOURCE VOLTAGE
VS. GATE CHARGE
(TYPICAL)



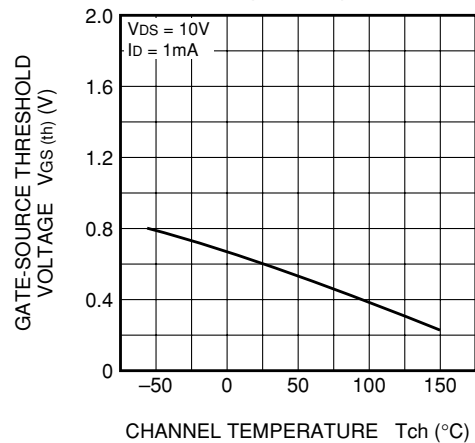
SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)



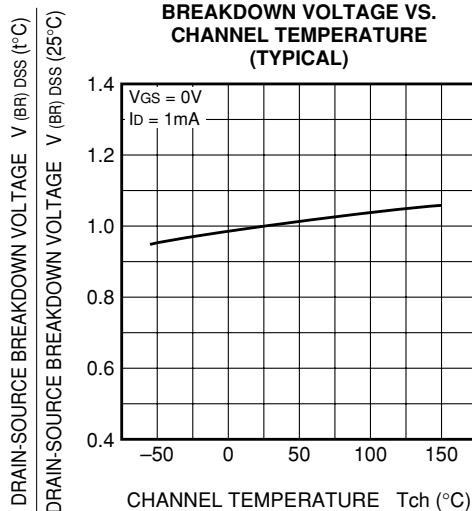
ON-STATE RESISTANCE VS.
CHANNEL TEMPERATURE
(TYPICAL)



THRESHOLD VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)



BREAKDOWN VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)



TRANSIENT THERMAL IMPEDANCE
CHARACTERISTICS

