

MITSUBISHI Nch POWER MOSFET

# FK14VS-10

HIGH-SPEED SWITCHING USE

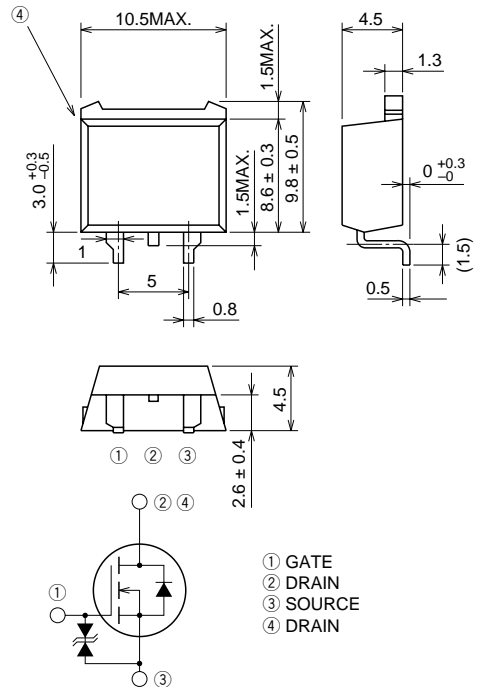
## FK14VS-10



- $V_{DSS}$  ..... 500V
- $r_{DS(ON)}$  (MAX) .....  $0.80\Omega$
- $I_D$  ..... 14A
- Integrated Fast Recovery Diode (MAX.) ..... 150ns

## OUTLINE DRAWING

Dimensions in mm



TO-220S

## APPLICATION

Servo motor drive, Robot, UPS, Inverter Fluorecent lamp, etc.

## MAXIMUM RATINGS (Tc = 25°C)

Symbol	Parameter	Conditions	Ratings	Unit
$V_{DSS}$	Drain-source voltage	$V_{GS} = 0V$	500	V
$V_{GSS}$	Gate-source voltage	$V_{DS} = 0V$	$\pm 30$	V
$I_D$	Drain current		14	A
$I_{DM}$	Drain current (Pulsed)		42	A
$I_S$	Source current		14	A
$I_{SM}$	Source current (Pulsed)		42	A
$P_D$	Maximum power dissipation		150	W
$T_{ch}$	Channel temperature		-55 ~ +150	°C
$T_{stg}$	Storage temperature		-55 ~ +150	°C
—	Weight	Typical value	1.2	g

Feb.1999

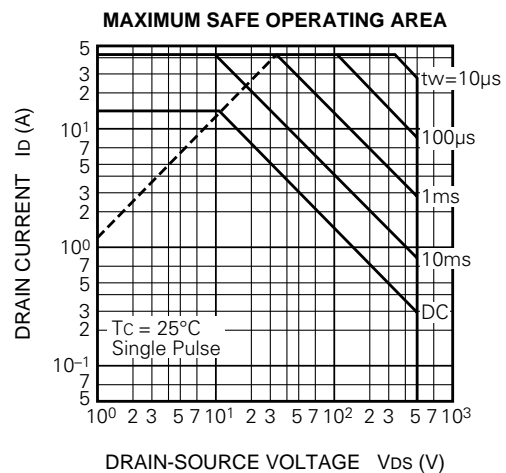
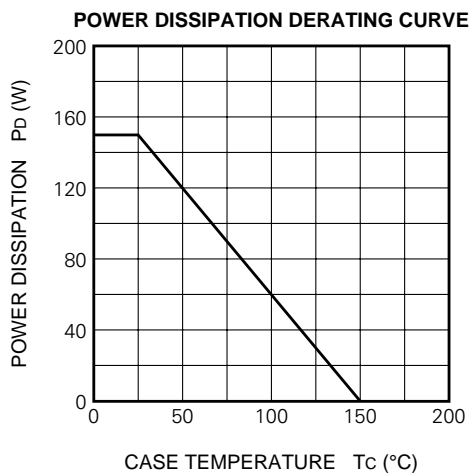
**FK14VS-10**

**HIGH-SPEED SWITCHING USE**

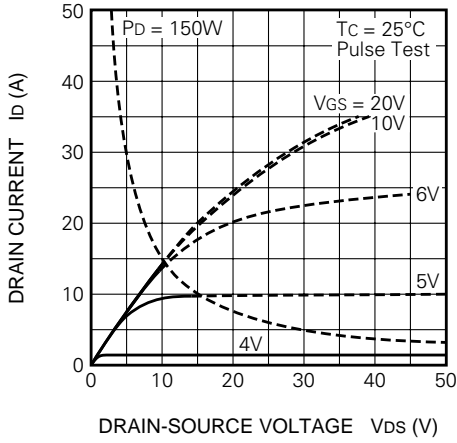
**ELECTRICAL CHARACTERISTICS** (Tch = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V (BR) DSS	Drain-source breakdown voltage	Id = 1mA, VGS = 0V	500	—	—	V
V (BR) GSS	Gate-source breakdown voltage	IG = ±100µA, VDS = 0V	±30	—	—	V
IGSS	Gate-source leakage current	VGS = ±25V, VDS = 0V	—	—	±10	µA
IDSS	Drain-source leakage current	VDS = 500V, VGS = 0V	—	—	1	mA
VGS (th)	Gate-source threshold voltage	Id = 1mA, VDS = 10V	2	3	4	V
rDS (ON)	Drain-source on-state resistance	Id = 7A, VGS = 10V	—	0.63	0.80	Ω
VDS (ON)	Drain-source on-state voltage	Id = 7A, VGS = 10V	—	4.41	5.60	V
yfs	Forward transfer admittance	Id = 7A, VDS = 10V	4.5	7.0	—	S
Ciss	Input capacitance	VDS = 25V, VGS = 0V, f = 1MHz	—	1500	—	pF
Coss	Output capacitance		—	180	—	pF
Crss	Reverse transfer capacitance		—	30	—	pF
td (on)	Turn-on delay time		—	30	—	ns
tr	Rise time	VDD = 200V, Id = 7A, VGS = 10V, RGEN = RGS = 50Ω	—	50	—	ns
td (off)	Turn-off delay time		—	130	—	ns
tf	Fall time		—	50	—	ns
VSD	Source-drain voltage	IS = 7A, VGS = 0V	—	1.5	2.0	V
Rth (ch-c)	Thermal resistance	Channel to case	—	—	0.83	°C/W
trr	Reverse recovery time	IS = 14A, dis/dt = -100A/µs	—	—	150	ns

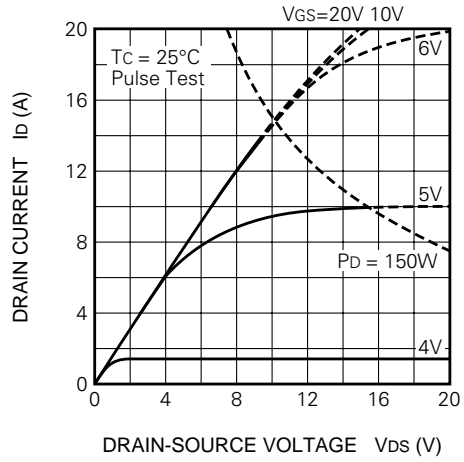
**PERFORMANCE CURVES**



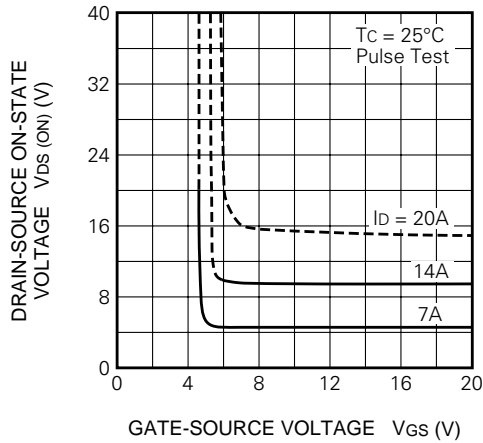
OUTPUT CHARACTERISTICS (TYPICAL)



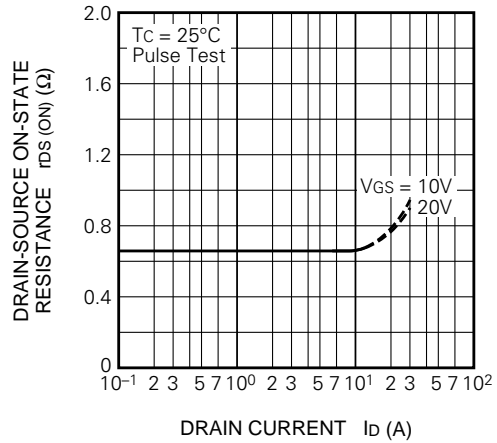
OUTPUT CHARACTERISTICS (TYPICAL)



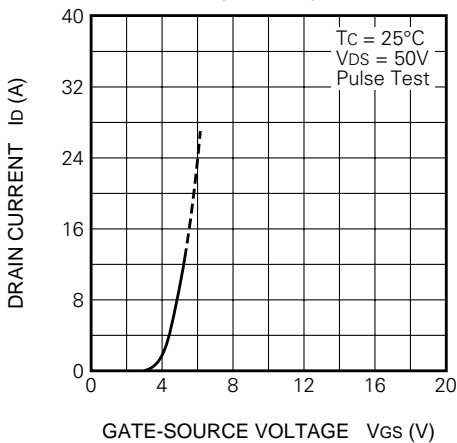
ON-STATE VOLTAGE VS. GATE-SOURCE VOLTAGE (TYPICAL)



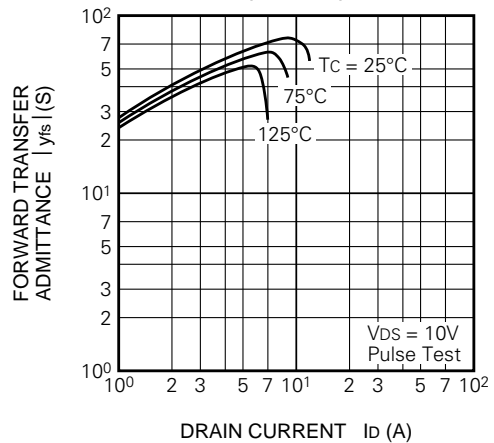
ON-STATE RESISTANCE VS. DRAIN CURRENT (TYPICAL)



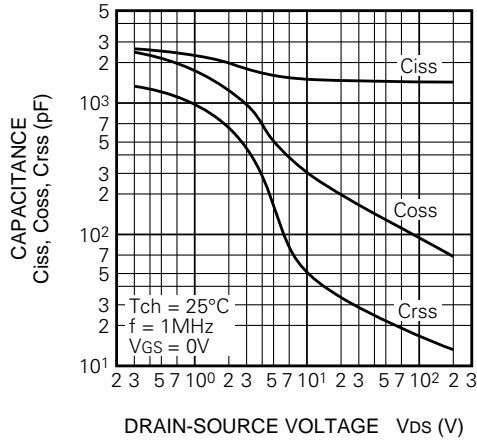
TRANSFER CHARACTERISTICS (TYPICAL)



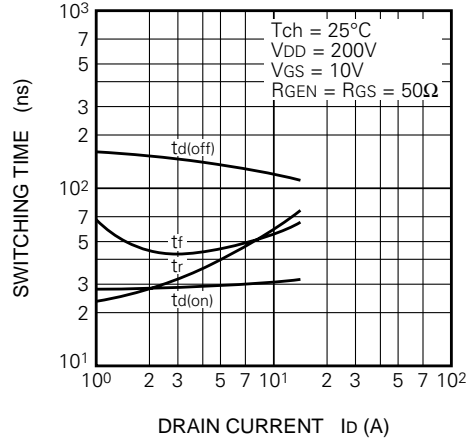
FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)



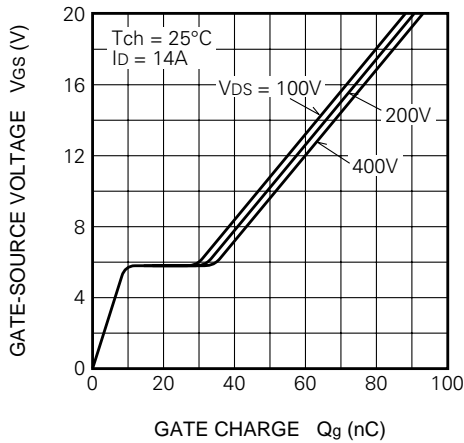
**CAPACITANCE VS. DRAIN-SOURCE VOLTAGE (TYPICAL)**



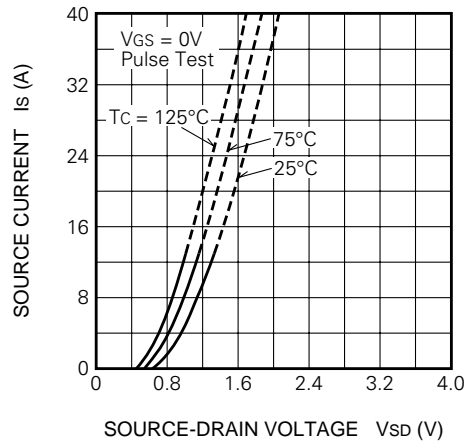
**SWITCHING CHARACTERISTICS (TYPICAL)**



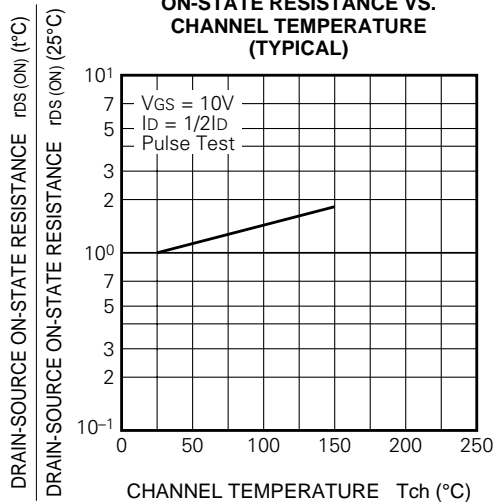
**GATE-SOURCE VOLTAGE VS. GATE CHARGE (TYPICAL)**



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



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



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

