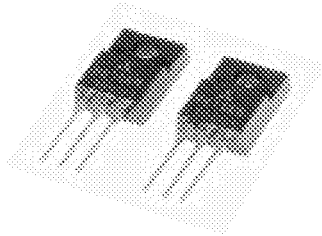


FK14KM-10

HIGH-SPEED SWITCHING USE

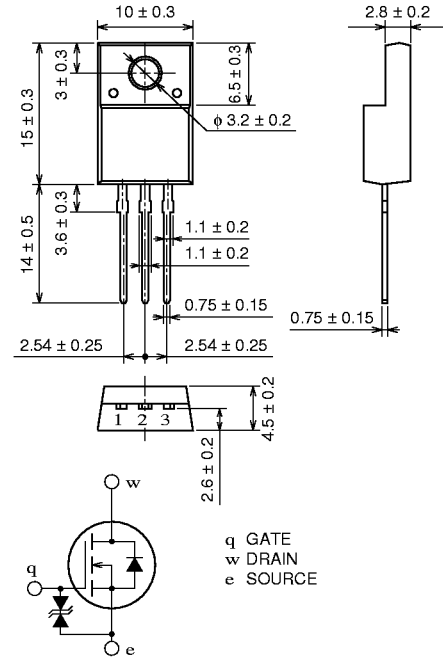
FK14KM-10



- ˆ V_{DS} 500V
- ˆ $r_{DS(ON)}$ (MAX) 0.80Ω
- ˆ I_D 14A
- ˆ V_{iso} 2000V
- ˆ Integrated Fast Recovery Diode (MAX.) 150ns

OUTLINE DRAWING

Dimensions in mm



TO-220FN

APPLICATION

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

MAXIMUM RATINGS ($T_c = 25^\circ\text{C}$)

Symbol	Parameter	Conditions	Ratings	Unit
V_{DS}	Drain-source voltage	$V_{GS} = 0V$	500	V
V_{GSS}	Gate-source voltage	$V_{DS} = 0V$	± 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		40	W
T_{ch}	Channel temperature		$-55 \sim +150$	$^\circ\text{C}$
T_{stg}	Storage temperature		$-55 \sim +150$	$^\circ\text{C}$
V_{iso}	Isolation voltage	AC for 1minute, Terminal to case	2000	V_{rms}
—	Weight	Typical value	2.0	g

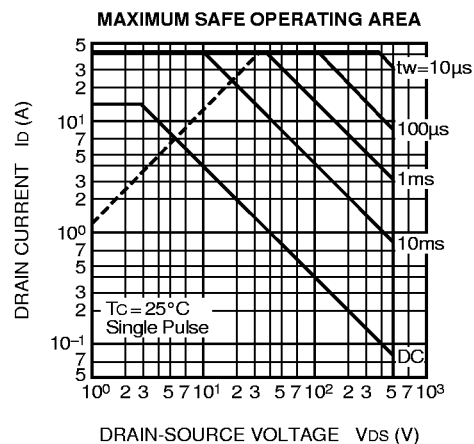
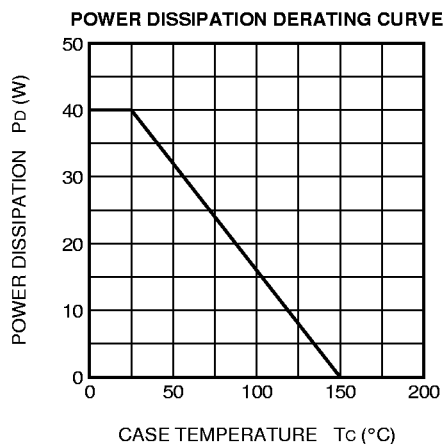
FK14KM-10

HIGH-SPEED SWITCHING USE

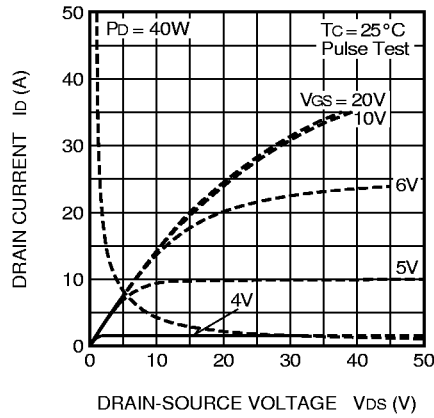
ELECTRICAL CHARACTERISTICS (T_{ch} = 25°C)

Symbol	Parameter	Test conditions	Limits			Unit
			Min.	Typ.	Max.	
V _{(BR) DSS}	Drain-source breakdown voltage	I _D = 1 mA, V _{GS} = 0 V	500	—	—	V
V _{(BR) GSS}	Gate-source breakdown voltage	I _G = ±100 μA, V _{DS} = 0 V	±30	—	—	V
I _{GSS}	Gate-source leakage current	V _{GS} = ±25 V, V _{DS} = 0 V	—	—	±10	μA
I _{DSS}	Drain-source leakage current	V _{DS} = 500 V, V _{GS} = 0 V	—	—	1	mA
V _{GS(th)}	Gate-source threshold voltage	I _D = 1 mA, V _{DS} = 10 V	2	3	4	V
r _{DS(ON)}	Drain-source on-state resistance	I _D = 7 A, V _{GS} = 10 V	—	0.63	0.80	Ω
V _{DS(ON)}	Drain-source on-state voltage	I _D = 7 A, V _{GS} = 10 V	—	4.41	5.60	V
y _{fs}	Forward transfer admittance	I _D = 7 A, V _{DS} = 10 V	4.5	7.0	—	S
C _{iss}	Input capacitance	V _{DS} = 25 V, V _{GS} = 0 V, f = 1 MHz	—	1500	—	pF
C _{oss}	Output capacitance		—	180	—	pF
C _{rss}	Reverse transfer capacitance		—	30	—	pF
t _{d(on)}	Turn-on delay time	V _{DD} = 200 V, I _D = 7 A, V _{GS} = 10 V, R _{GEN} = R _{GS} = 50 Ω	—	30	—	ns
t _r	Rise time		—	50	—	ns
t _{d(off)}	Turn-off delay time		—	130	—	ns
t _f	Fall time		—	50	—	ns
V _{SD}	Source-drain voltage	I _S = 7 A, V _{GS} = 0 V	—	1.5	2.0	V
R _{th(ch-c)}	Thermal resistance	Channel to case	—	—	3.13	°C/W
t _{rr}	Reverse recovery time	I _S = 14 A, di/dt = -100 A/μs	—	—	150	ns

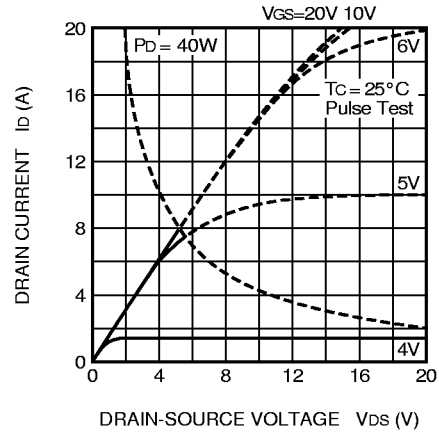
PERFORMANCE CURVES



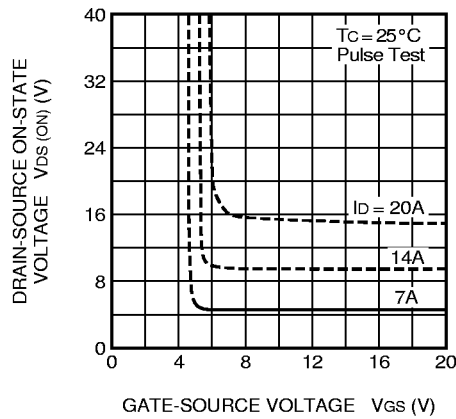
OUTPUT CHARACTERISTICS
(TYPICAL)



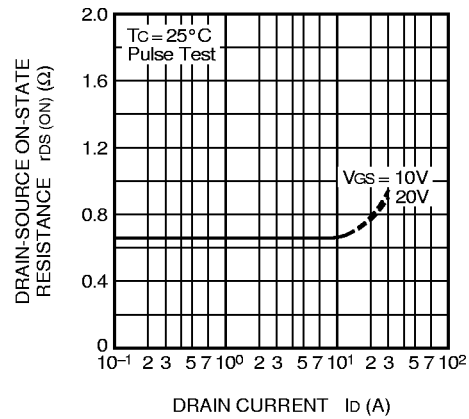
OUTPUT CHARACTERISTICS
(TYPICAL)



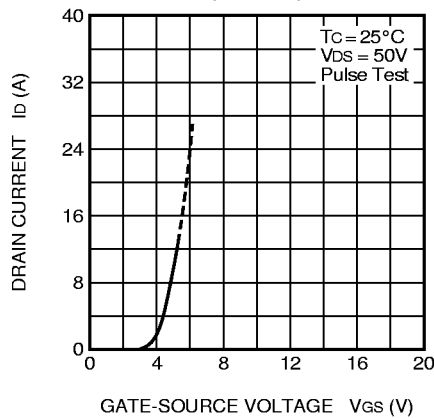
ON-STATE VOLTAGE VS.
GATE-SOURCE VOLTAGE
(TYPICAL)



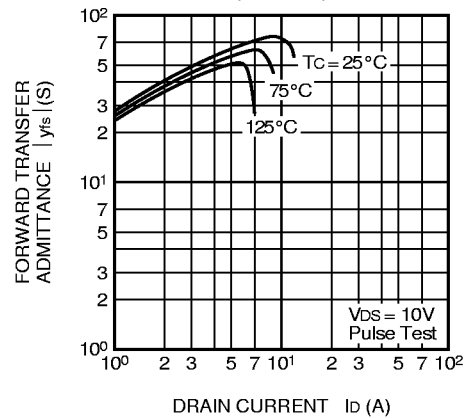
ON-STATE RESISTANCE VS.
DRAIN CURRENT
(TYPICAL)



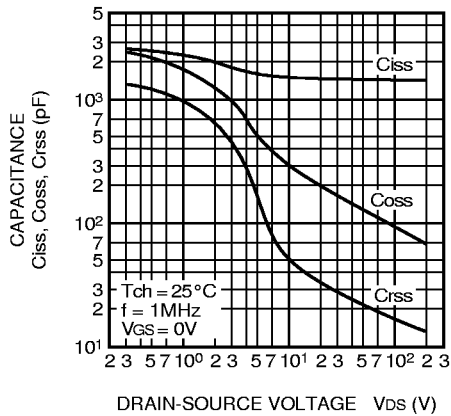
TRANSFER CHARACTERISTICS
(TYPICAL)



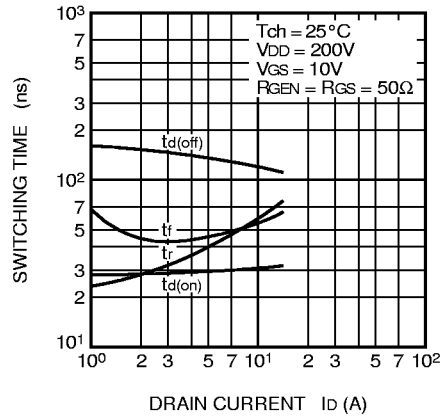
FORWARD TRANSFER ADMITTANCE
VS. DRAIN CURRENT
(TYPICAL)



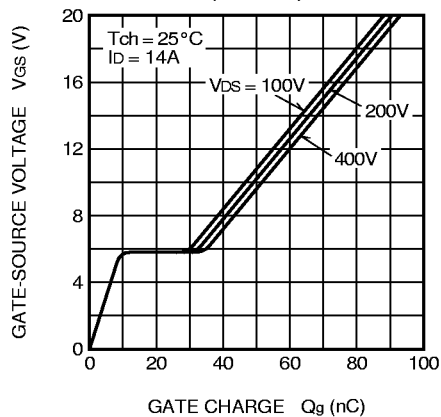
CAPACITANCE VS.
DRAIN-SOURCE VOLTAGE
(TYPICAL)



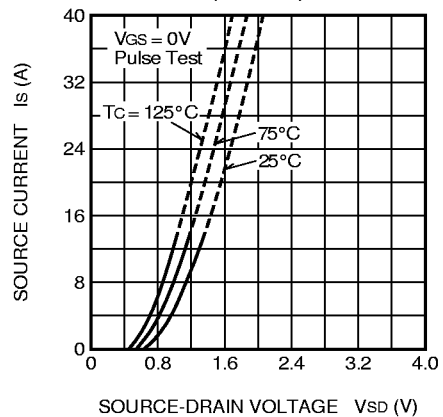
SWITCHING CHARACTERISTICS
(TYPICAL)



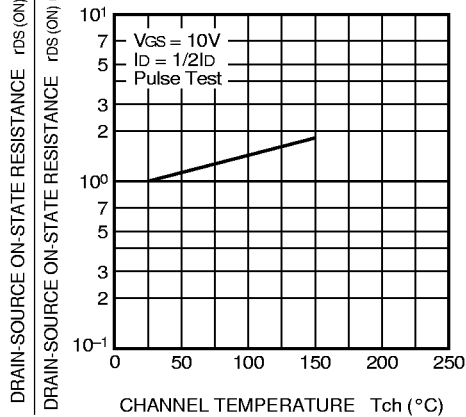
GATE-SOURCE VOLTAGE
VS. GATE CHARGE
(TYPICAL)



SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS
(TYPICAL)



ON-STATE RESISTANCE VS.
CHANNEL TEMPERATURE
(TYPICAL)



THRESHOLD VOLTAGE VS.
CHANNEL TEMPERATURE
(TYPICAL)

