

FX50SMJ-03

High-Speed Switching Use Pch Power MOS FET

REJ03G0279-0100

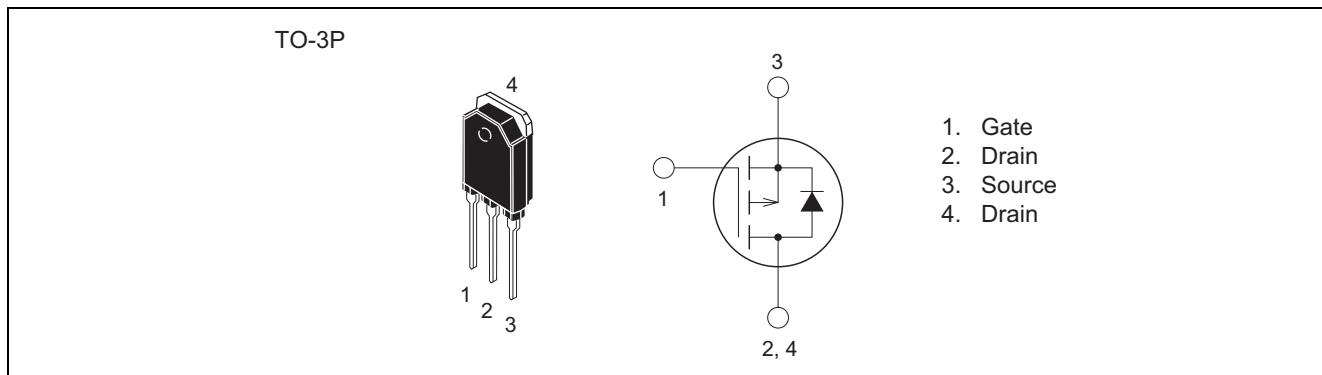
Rev.1.00

Aug.20.2004

Features

- Drive voltage : 4 V
- V_{DSS} : -30 V
- $r_{DS(ON)}(\text{max})$: 35 mΩ
- I_D : -50 A
- Recovery Time of the Integrated Fast Recovery Diode (TYP.) : 55 ns

Outline



Applications

Motor control, lamp control, solenoid control, DC-DC converters, etc.

Maximum Ratings

(T_c = 25°C)

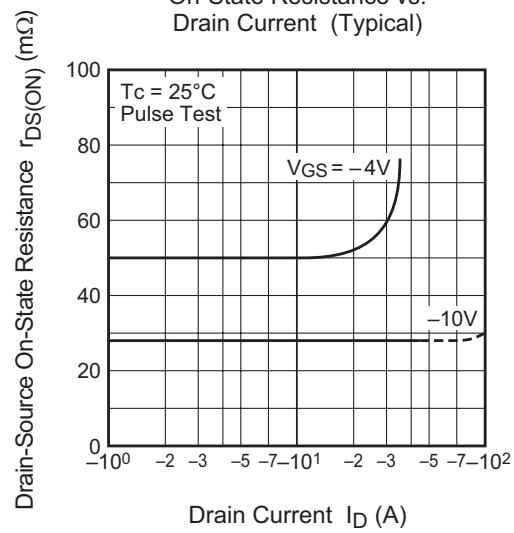
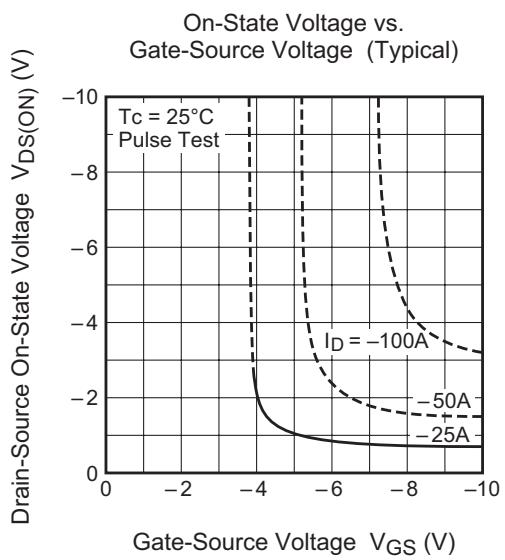
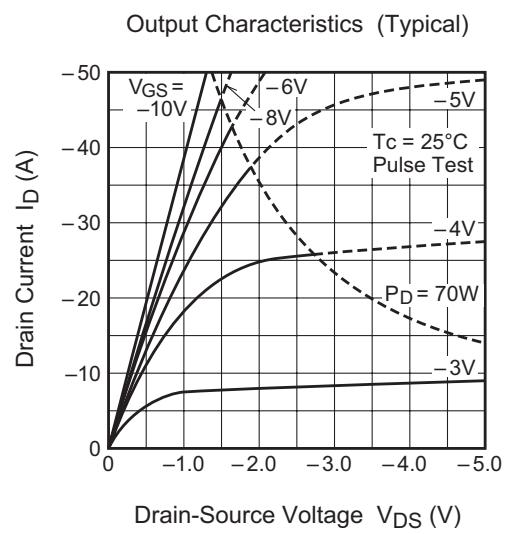
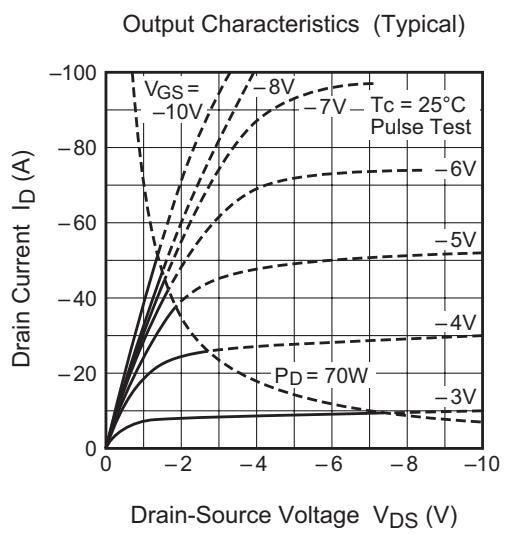
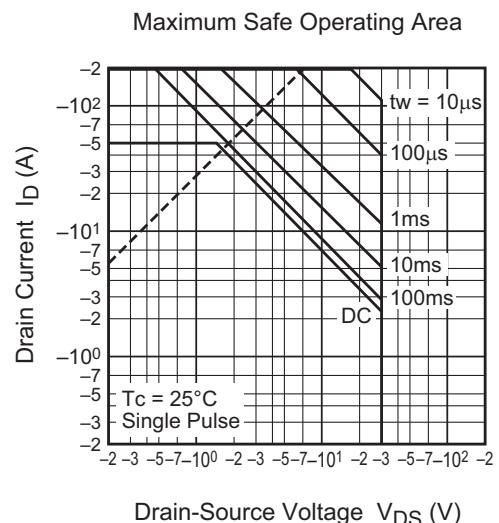
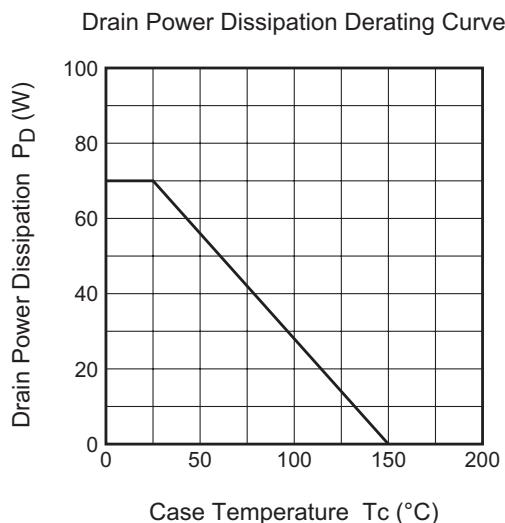
Parameter	Symbol	Ratings	Unit	Conditions
Drain-source voltage	V_{DSS}	-30	V	$V_{GS} = 0$ V
Gate-source voltage	V_{GSS}	± 20	V	$V_{DS} = 0$ V
Drain current	I_D	-50	A	
Drain current (Pulsed)	I_{DM}	-200	A	
Avalanche current (Pulsed)	I_{DA}	-50	A	$L = 10 \mu\text{H}$
Source current	I_S	-50	A	
Source current (Pulsed)	I_{SM}	-200	A	
Maximum power dissipation	P_D	70	W	
Channel temperature	T_{ch}	-55 to +150	°C	
Storage temperature	T_{stg}	-55 to +150	°C	
Mass	—	4.8	g	Typical value

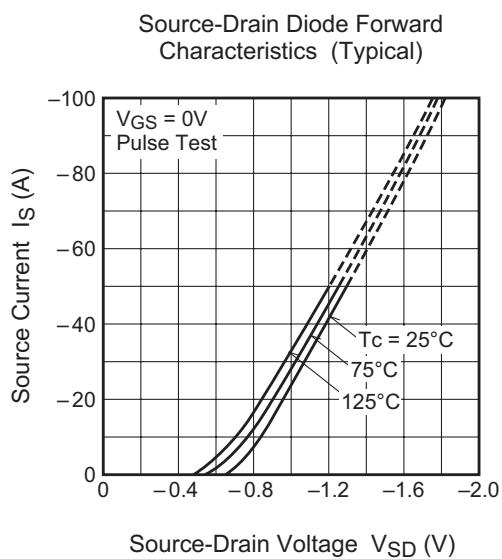
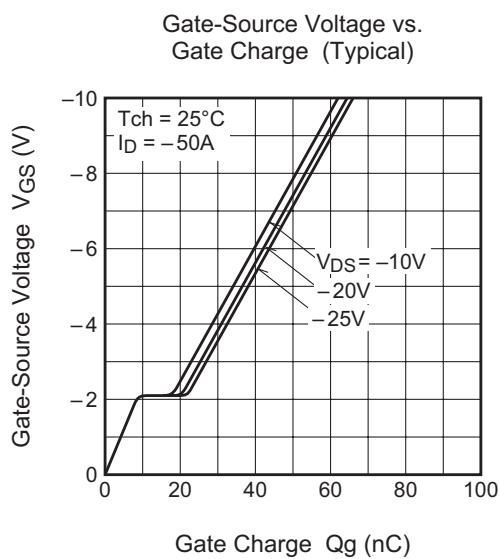
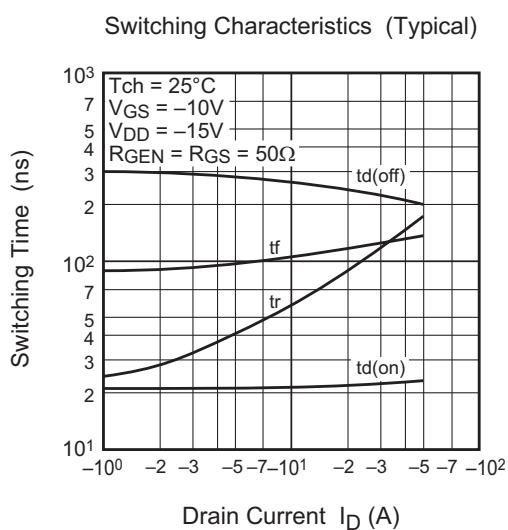
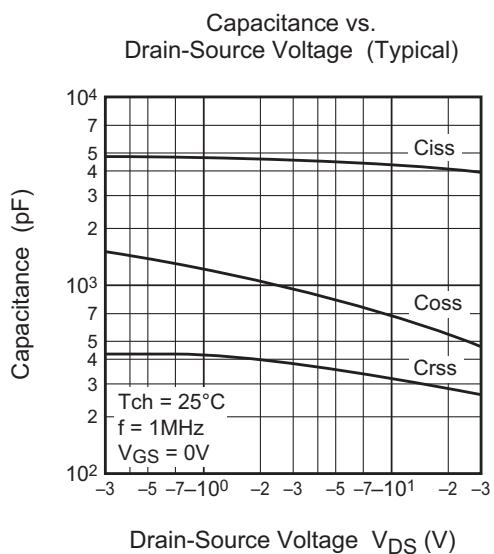
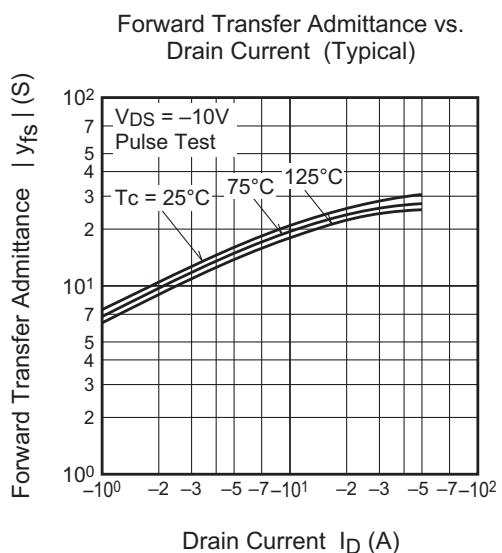
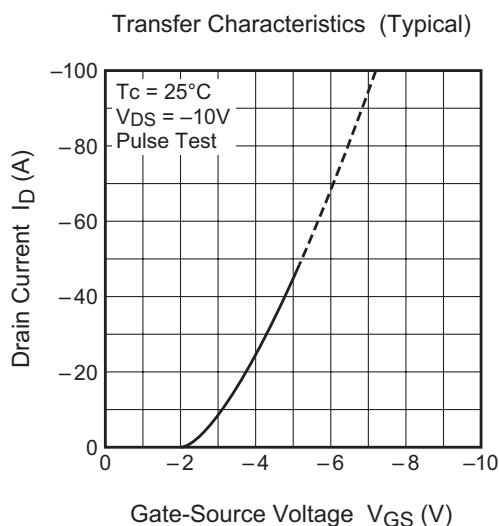
Electrical Characteristics

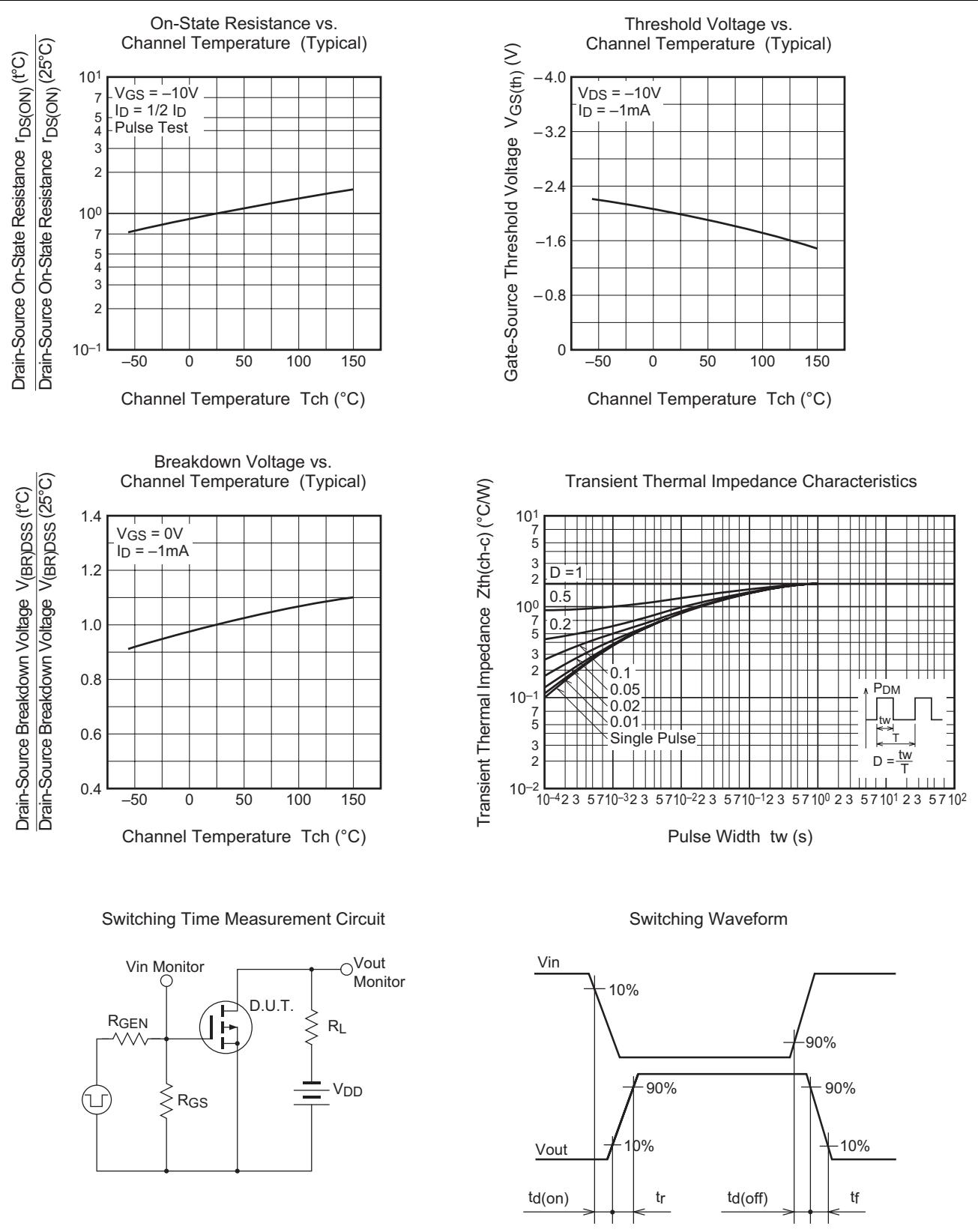
(Tch = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-source breakdown voltage	$V_{(BR)DSS}$	-30	—	—	V	$I_D = 1 \text{ mA}, V_{GS} = 0 \text{ V}$
Gate-source leakage current	I_{GSS}	—	—	± 0.1	μA	$V_{GS} = \pm 20 \text{ V}, V_{DS} = 0 \text{ V}$
Drain-source leakage current	I_{DSS}	—	—	-0.1	mA	$V_{DS} = -30 \text{ V}, V_{GS} = 0 \text{ V}$
Gate-source threshold voltage	$V_{GS(\text{th})}$	-1.3	-1.8	-2.3	V	$I_D = -1 \text{ mA}, V_{DS} = -10 \text{ V}$
Drain-source on-state resistance	$r_{DS(\text{ON})}$	—	28	35	$\text{m}\Omega$	$I_D = -25 \text{ A}, V_{GS} = -10 \text{ V}$
Drain-source on-state resistance	$r_{DS(\text{ON})}$	—	54	72	$\text{m}\Omega$	$I_D = -9 \text{ A}, V_{GS} = -4 \text{ V}$
Drain-source on-state voltage	$V_{DS(\text{ON})}$	—	-0.70	-0.88	V	$I_D = -25 \text{ A}, V_{GS} = -10 \text{ V}$
Forward transfer admittance	$ y_{fs} $	—	23	—	S	$I_D = -25 \text{ A}, V_{DS} = -10 \text{ V}$
Input capacitance	C_{iss}	—	4270	—	pF	$V_{DS} = -10 \text{ V}, V_{GS} = 0 \text{ V},$ $f = 1 \text{ MHz}$
Output capacitance	C_{oss}	—	695	—	pF	
Reverse transfer capacitance	C_{rss}	—	342	—	pF	
Turn-on delay time	$t_{d(on)}$	—	21	—	ns	
Rise time	t_r	—	103	—	ns	$V_{DD} = -15 \text{ V}, I_D = -25 \text{ A},$ $V_{GS} = -10 \text{ V},$ $R_{\text{GEN}} = R_{GS} = 50 \Omega$
Turn-off delay time	$t_{d(off)}$	—	223	—	ns	
Fall time	t_f	—	122	—	ns	
Source-drain voltage	V_{SD}	—	-1.0	-1.5	V	$I_S = -25 \text{ A}, V_{GS} = 0 \text{ V}$
Thermal resistance	$R_{th(\text{ch-c})}$	—	—	1.79	$^{\circ}\text{C/W}$	Channel to case
Reverse recovery time	t_{rr}	—	55	—	ns	$I_S = -25 \text{ A}, \text{dis}/dt = 50 \text{ A}/\mu\text{s}$

Performance Curves



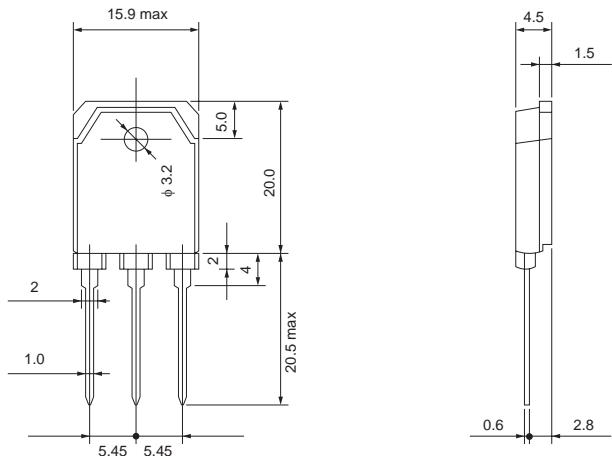




Package Dimensions

TO-3P

EIAJ Package Code	JEDEC Code	Mass (g) (reference value)	Lead Material
Conforms	—	4.8	Cu alloy



Symbol	Dimension in Millimeters		
	Min	Typ	Max
A			
A ₁			
A ₂			
b			
D			
E			
e			
x			
y			
y ₁			
ZD			
ZE			

Note 1) The dimensional figures indicate representative values unless otherwise the tolerance is specified.

Order Code

Lead form	Standard packing	Quantity	Standard order code	Standard order code example
Straight type	Static electricity prevention bag	20	Type name	FX50SMJ-03
Lead form	Plastic Magazine (Tube)	30	Type name – Lead forming code	FX50SMJ-03-A8

Note : Please confirm the specification about the shipping in detail.

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