

# P70F5EN

**Power MOSFETs**  
**50V, 70A, N-channel**

**Feature**

- N-channel
- Isolated Package
- Low Ron
- 10V Gate Drive
- Low Capacitance
- Pb free terminal
- RoHS:Yes

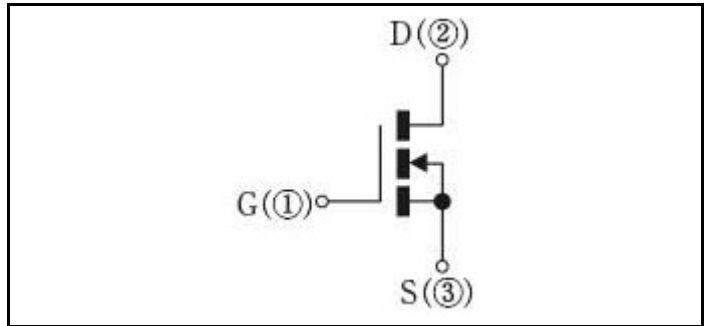
**OUTLINE**

**Package (House Name):** FTO-220AG

**Package (JEITA Code):** SC-91



**Equivalent circuit**



**Absolute Maximum Ratings** (unless otherwise specified : Tc=25°C)

Item	Symbol	Conditions	Ratings	Unit
Storage temperature	Tstg		-55 to 150	°C
Channel temperature	Tch		150	°C
Drain-source voltage	V <sub>DSS</sub>		50	V
Gate-source voltage	V <sub>GSS</sub>		±20	V
Continuous drain current(DC)	I <sub>D</sub>		70	A
Continuous drain current(Peak)	I <sub>DP</sub>	Pulse width 10µs, duty=1/100	280	A
Total power dissipation	P <sub>T</sub>		53	W
Single avalanche current	I <sub>AS</sub>	Starting Tch=25°C Tch≤150°C	70	A
Single avalanche energy	E <sub>AS</sub>	Starting Tch=25°C Tch≤150°C	245	mJ
Dielectric strenght	V <sub>dis</sub>	Terminals to case, AC1min	2	kV
Mounting torque	TOR	(Recommended torque : 0.3N·m)	0.5	N·m

\* : See the original Specifications

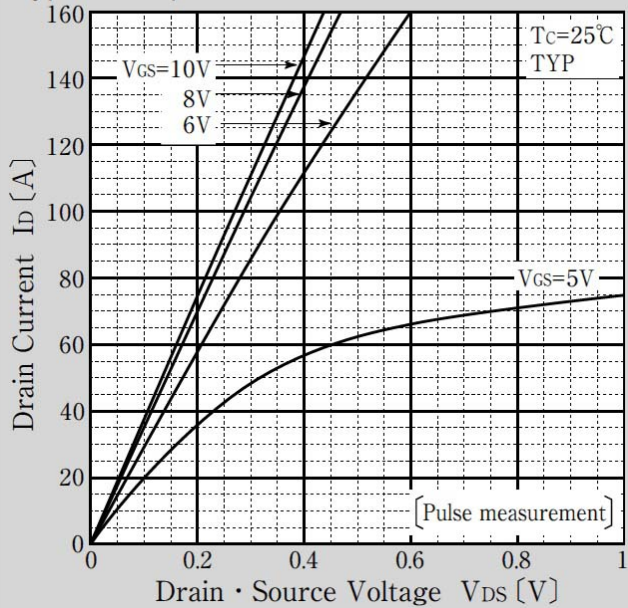
**Electrical Characteristics** (unless otherwise specified : Tc=25°C)

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	ID=1mA, VGS=0V	50			V
Zero gate voltage drain current	$I_{DSS}$	VDS=50V, VGS=0V			1	$\mu$ A
Gate-source leakage current	$I_{GSS}$	VGS= $\pm$ 20V, VDS=0V			$\pm$ 0.1	$\mu$ A
Forward transconductance	$g_{fs}$	ID=35A, VDS=10V	25			S
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=35A, VGS=10V		0.0027	0.0032	$\Omega$
Gate threshold voltage	$V_{th}$	ID=1mA, VDS=10V	2	3	4	V
Source-drain diode forward voltage	$V_{SD}$	IS=70A, VGS=0V			1.5	V
Thermal resistance	$R_{th(j-c)}$	Junction to case			2.35	$^{\circ}$ C/W
Total gate charge	$Q_g$	VDD=40V, VGS=10V, ID=70A		100		nC
Gate to source charge	$Q_{gs}$	VDD=40V, VGS=10V, ID=70A		26		nC
Gate to drain charge	$Q_{gd}$	VDD=40V, VGS=10V, ID=70A		38		nC
Input capacitance	$C_{iss}$	VDS=25V, VGS=0V, f=1MHz		5500		pF
Reverse transfer capacitance	$C_{rss}$	VDS=25V, VGS=0V, f=1MHz		440		pF
Output capacitance	$C_{oss}$	VDS=25V, VGS=0V, f=1MHz		955		pF
Turn-on delay time	$t_{d(on)}$	ID=35A, RL=0.71 $\Omega$ , VDD=25V, Rg=0 $\Omega$ , VGS(+)=10V, VGS(-)=0V		13		ns
Rise time	$t_r$	ID=35A, RL=0.71 $\Omega$ , VDD=25V, Rg=0 $\Omega$ , VGS(+)=10V, VGS(-)=0V		45		ns
Turn-off delay time	$t_{d(off)}$	ID=35A, RL=0.71 $\Omega$ , VDD=25V, Rg=0 $\Omega$ , VGS(+)=10V, VGS(-)=0V		53		ns
Fall time	$t_f$	ID=35A, RL=0.71 $\Omega$ , VDD=25V, Rg=0 $\Omega$ , VGS(+)=10V, VGS(-)=0V		44		ns
Diode reverse recovery time	$t_{rr}$	IF=70A, VGS=0V, di/dt=100A/ $\mu$ s		52		ns
Diode reverse recovery charge	$Q_{rr}$	IF=70A, VGS=0V, di/dt=100A/ $\mu$ s		86		nC

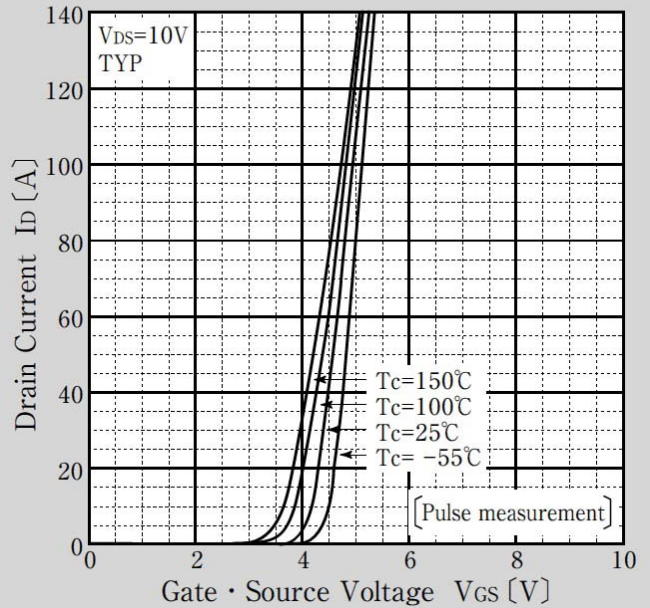
※ : See the original Specifications

# CHARACTERISTIC DIAGRAMS

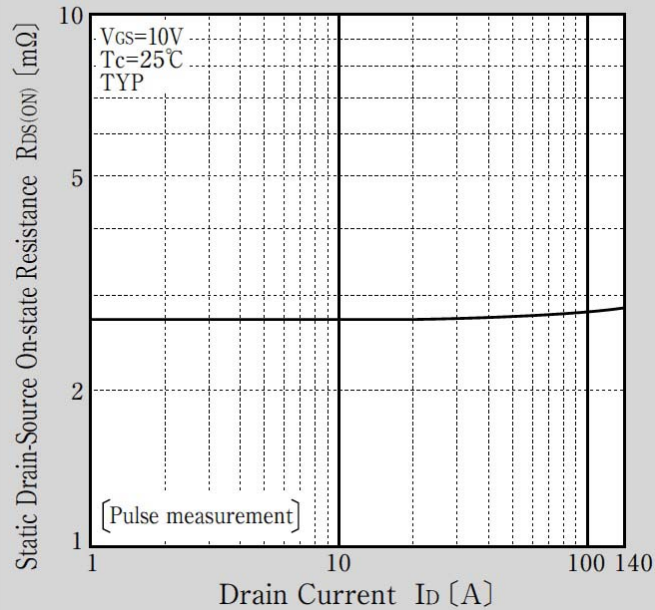
### Typical Output Characteristics



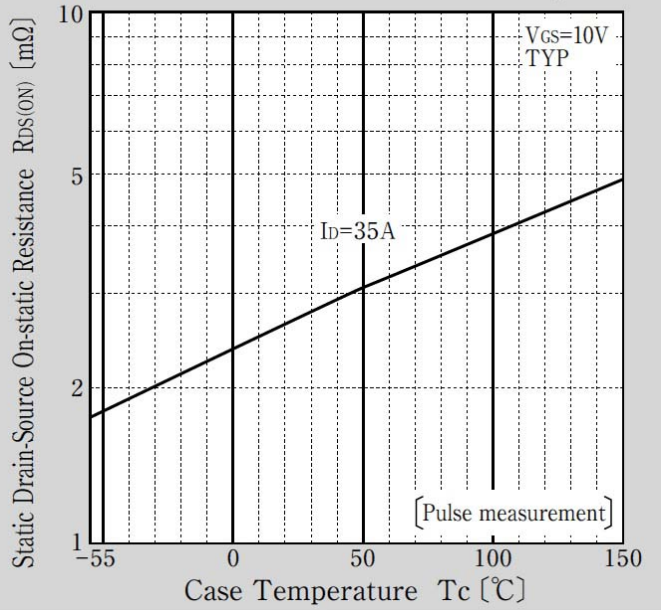
### Transfer Characteristics



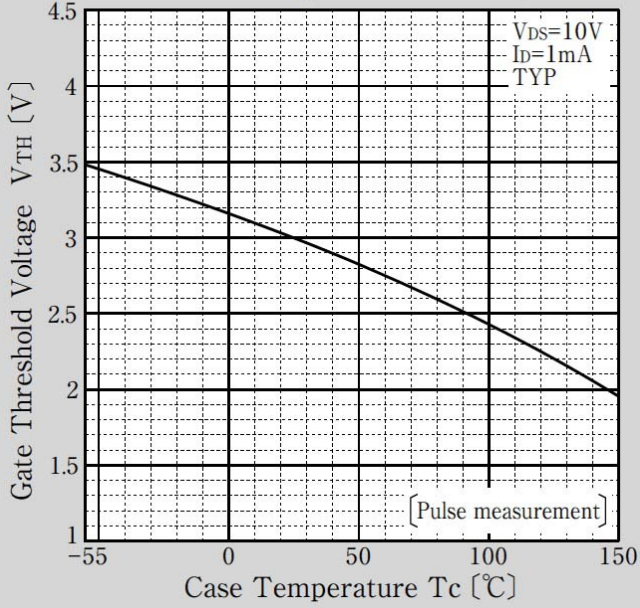
### Static Drain-Source On-state Resistance vs Drain Current



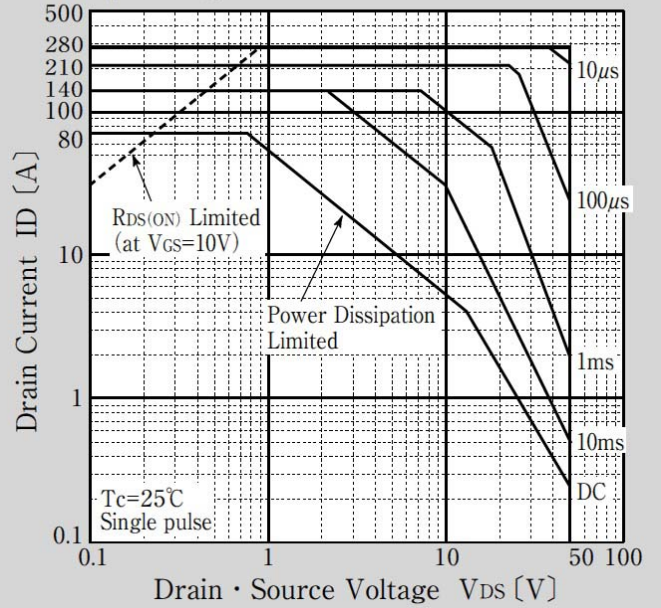
### Static Drain-Source On-state Resistance vs Case Temperature



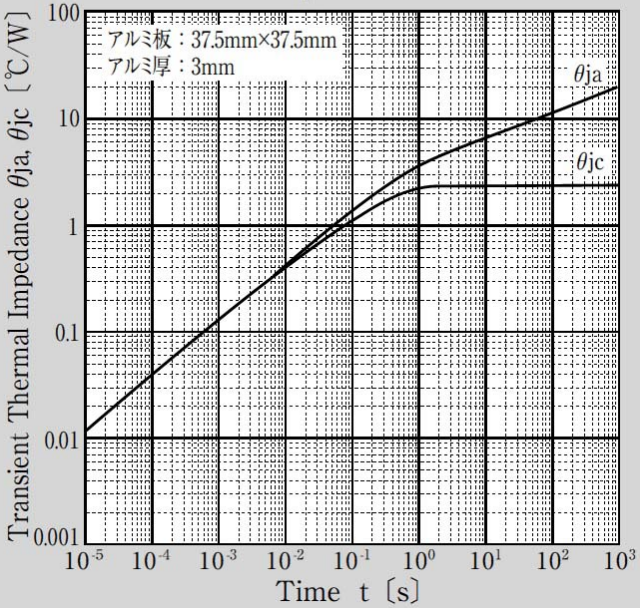
Gate Threshold Voltage vs Case Temperature



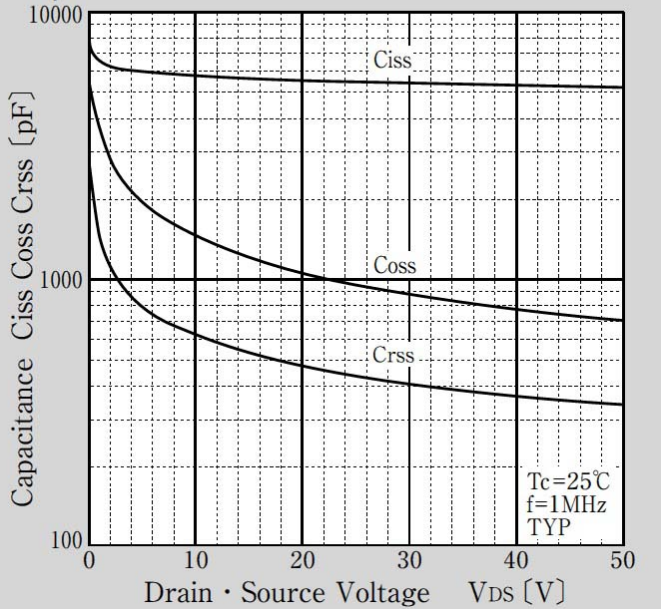
Safe Operating Area



Transient Thermal Impedance

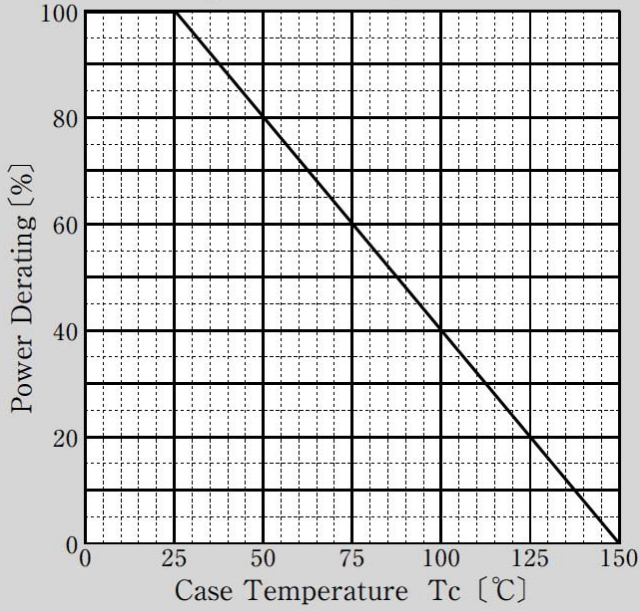


Capacitance Characteristics

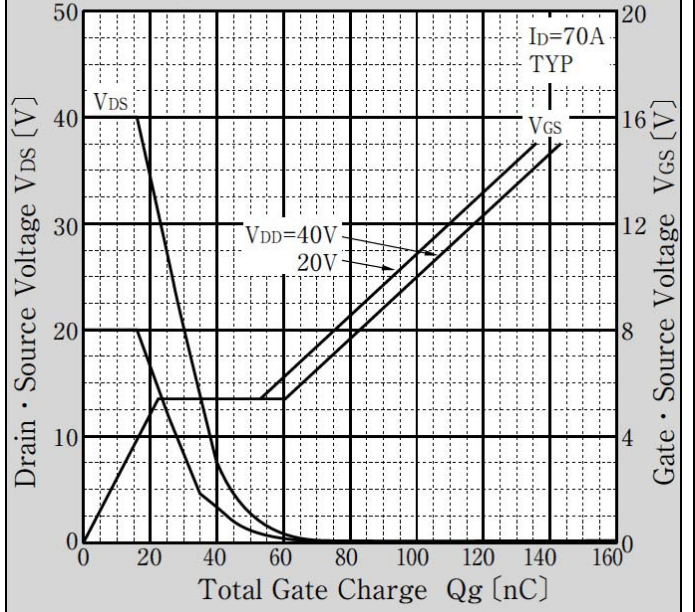




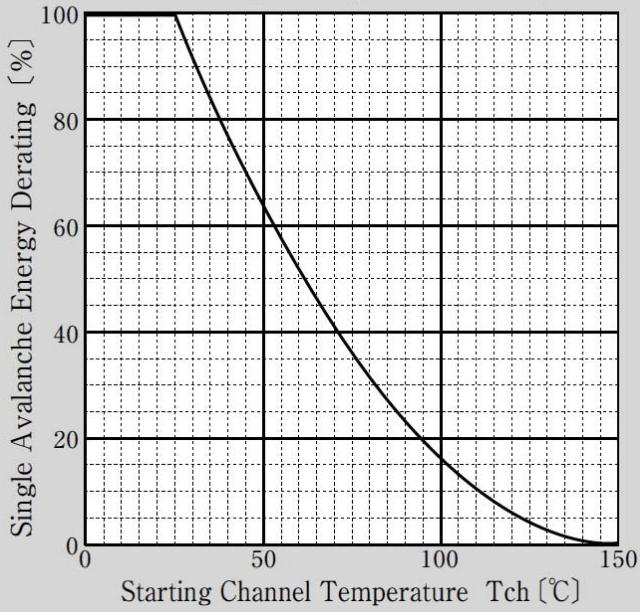
Power Derating - Case Temperature



Gate Charge Characteristics

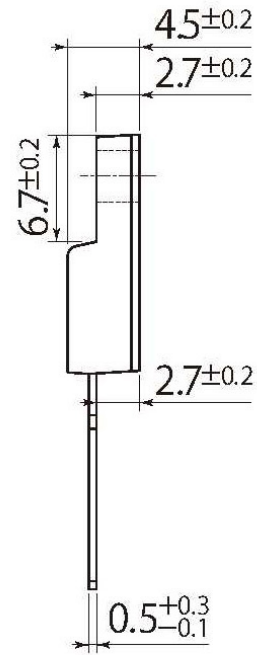
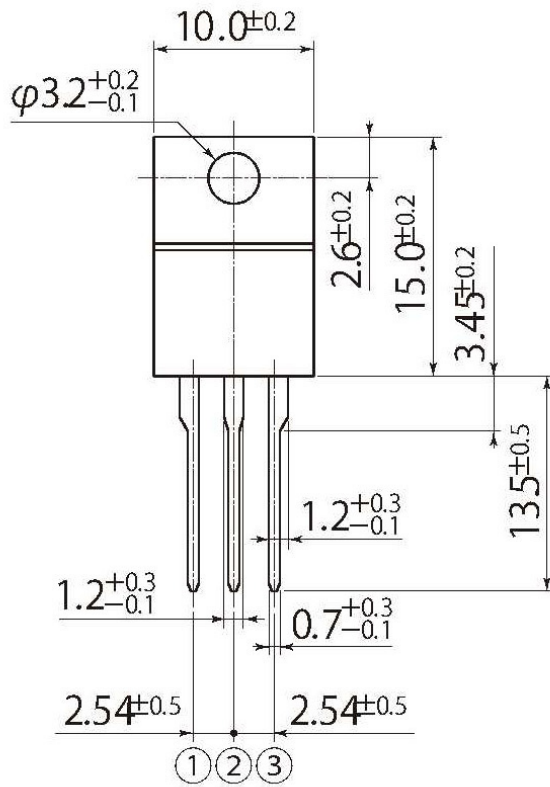


Single Avalanche Energy Derating vs Channel Temperature



J8

JEDEC Code	-
JEITA Code	SC-91
House Name	FTO-220AG(3pin)



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