

## P6F50HP2

### Power MOSFETs

500V, 6A, N-channel

#### Feature

- N-channel
- High Voltage
- High Speed Switching
- Low Capacitance
- High Avalanche Durability, High di/dt Durability
- Pb free terminal
- RoHS:Yes

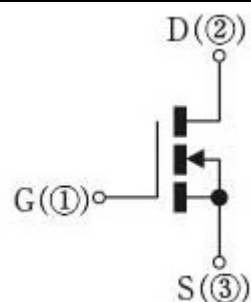
#### OUTLINE

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	T <sub>stg</sub>		-55 to 150	°C
Channel temperature	T <sub>ch</sub>		150	°C
Drain-source voltage	V <sub>DSS</sub>		500	V
Gate-source voltage	V <sub>GSS</sub>		±30	V
Continuous drain current(DC)	I <sub>D</sub>		6	A
Continuous drain current(Peak)	I <sub>DP</sub>	Pulse width 10μs, duty=1/100	24	A
Continuous source current(DC)	I <sub>S</sub>		6	A
Total power dissipation	P <sub>T</sub>		62.5	W
Repetitive avalanche current	I <sub>AR</sub>	Starting T <sub>ch</sub> =25°C T <sub>ch</sub> ≤150°C	6	A
Single avalanche energy	E <sub>AS</sub>	Starting T <sub>ch</sub> =25°C T <sub>ch</sub> ≤150°C	50	mJ
Repetitive avalanche energy	E <sub>AR</sub>	Starting T <sub>ch</sub> =25°C T <sub>ch</sub> ≤150°C	5	mJ
Drain-source diode di/dt strength	di/dt	I <sub>S</sub> =6A, T <sub>c</sub> =25°C	350	A/μs
Dielectric strength	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

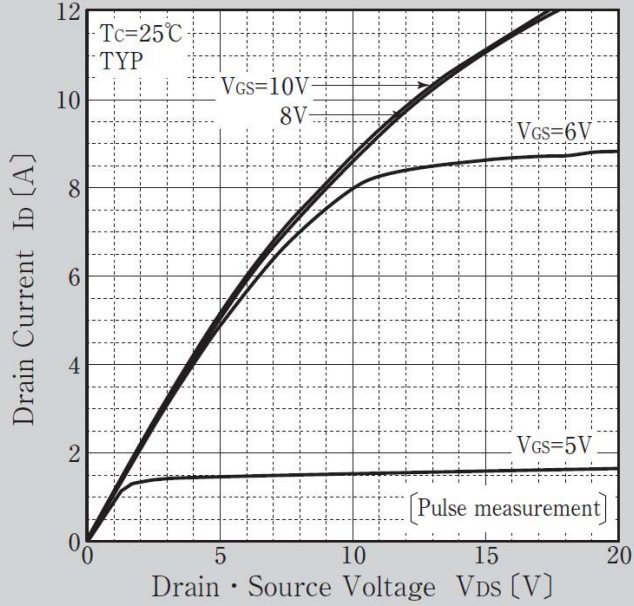
**Electrical Characteristics** (unless otherwise specified : Tc=25°C)

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	ID=1mA, VGS=0V	500			V
Zero gate voltage drain current	$I_{DSS}$	VDS=500V, VGS=0V			100	$\mu$ A
Gate-source leakage current	$I_{GSS}$	VGS= $\pm$ 25V, VDS=0V			$\pm$ 10	$\mu$ A
Forward transconductance	$g_{fs}$	ID=3A, VDS=10V	3	6		S
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=3A, VGS=10V		1	1.25	$\Omega$
Gate threshold voltage	$V_{th}$	ID=1mA, VDS=10V	3	3.75	4.5	V
Source-drain diode forward voltage	$V_{SD}$	IS=3A, VGS=0V			1.5	V
Thermal resistance	$R_{th(j-c)}$	Junction to case			2	$^{\circ}$ C/W
Total gate charge	$Q_g$	VDD=400V, VGS=10V, ID=6A		12.5		nC
Input capacitance	$C_{iss}$	VDS=50V, VGS=0V, f=1MHz		500		pF
Reverse transfer capacitance	$C_{rss}$	VDS=50V, VGS=0V, f=1MHz		4.2		pF
Output capacitance	$C_{oss}$	VDS=50V, VGS=0V, f=1MHz		55		pF
Turn-on delay time	$t_{d(on)}$	ID=3A, RL=50 $\Omega$ , VDD=150V, Rg=50 $\Omega$ , VGS(+)=10V, VGS(-)=0V		12		ns
Rise time	$t_r$	ID=3A, RL=50 $\Omega$ , VDD=150V, Rg=50 $\Omega$ , VGS(+)=10V, VGS(-)=0V		20		ns
Turn-off delay time	$t_{d(off)}$	ID=3A, RL=50 $\Omega$ , VDD=150V, Rg=50 $\Omega$ , VGS(+)=10V, VGS(-)=0V		40		ns
Fall time	$t_f$	ID=3A, RL=50 $\Omega$ , VDD=150V, Rg=50 $\Omega$ , VGS(+)=10V, VGS(-)=0V		22		ns

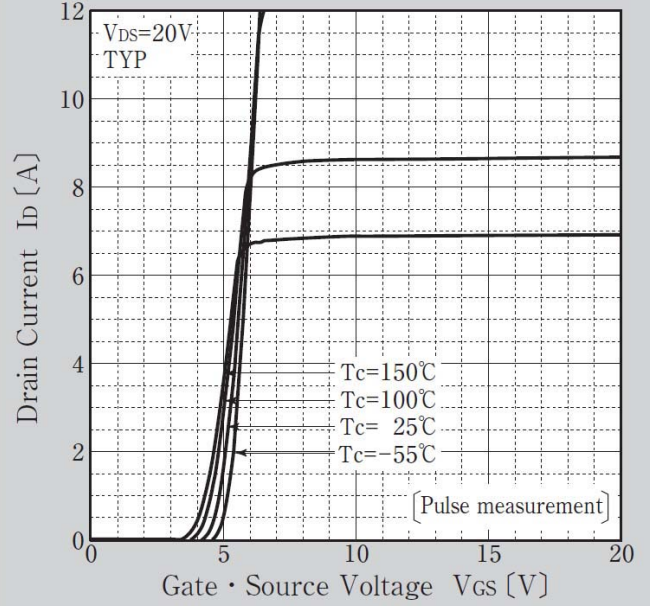
\* : See the original Specifications

# CHARACTERISTIC DIAGRAMS

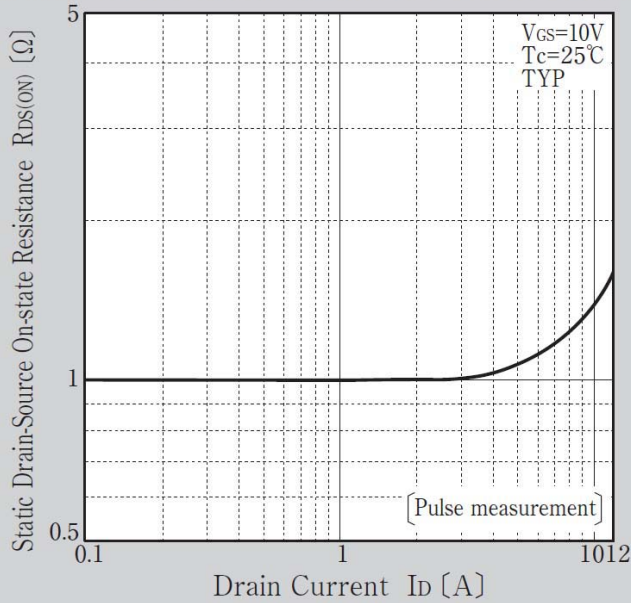
### Typical Output Characteristics



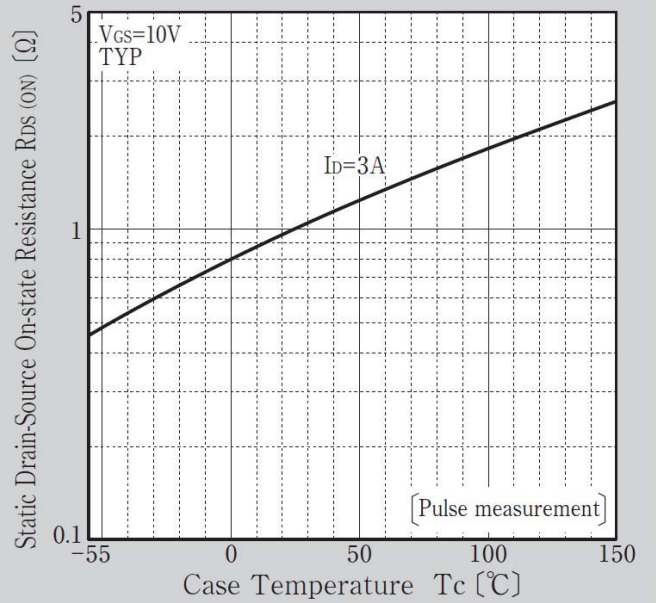
### Transfer Characteristics

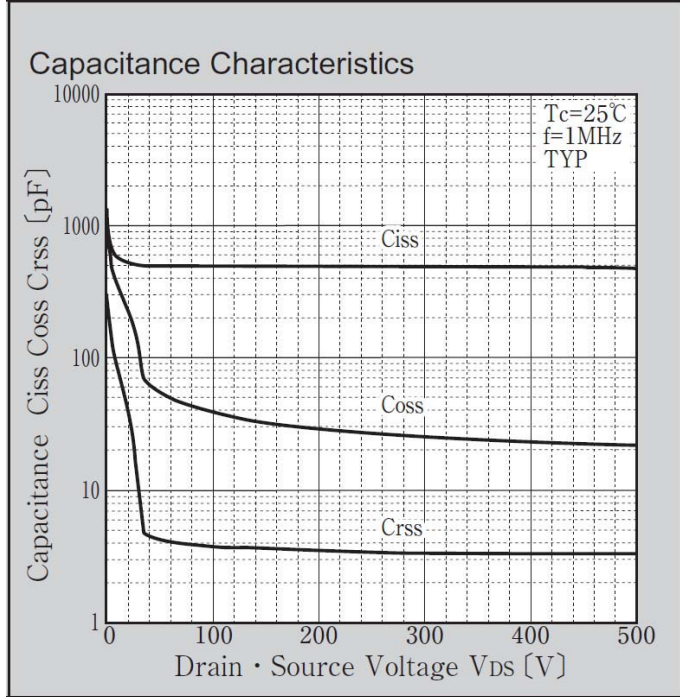
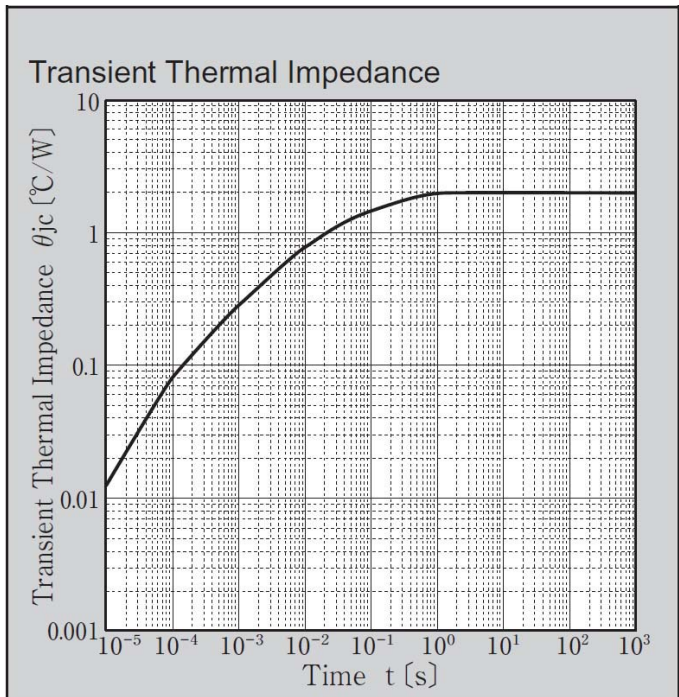
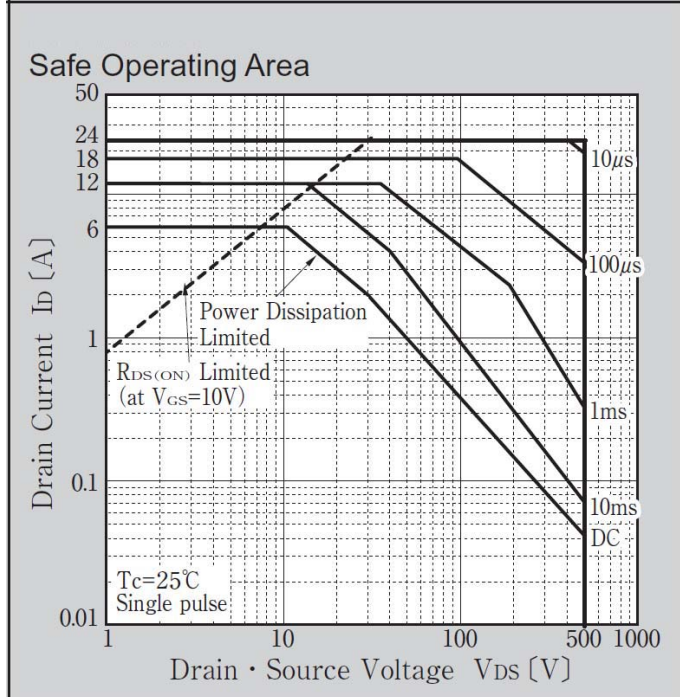
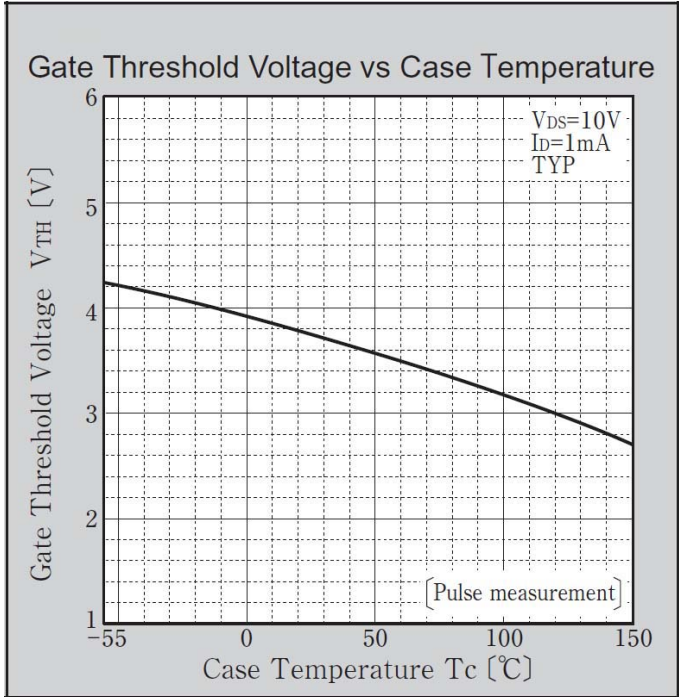


### Static Drain-Source On-state Resistance vs Drain Current

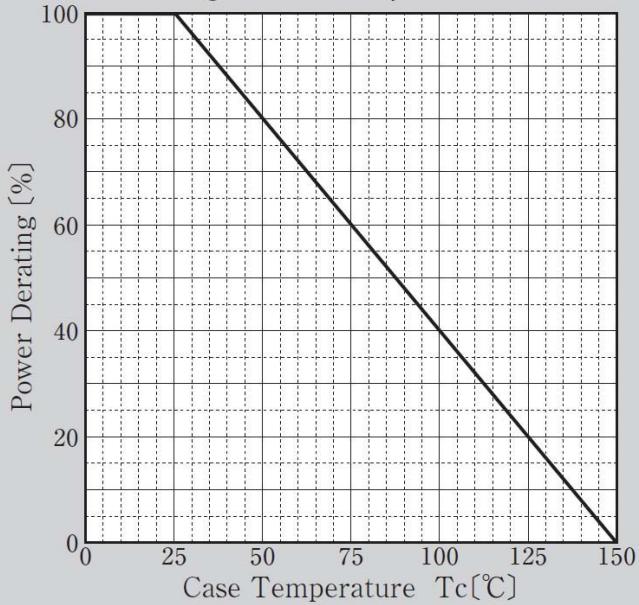


### Static Drain-Source On-state Resistance vs Case Temperature

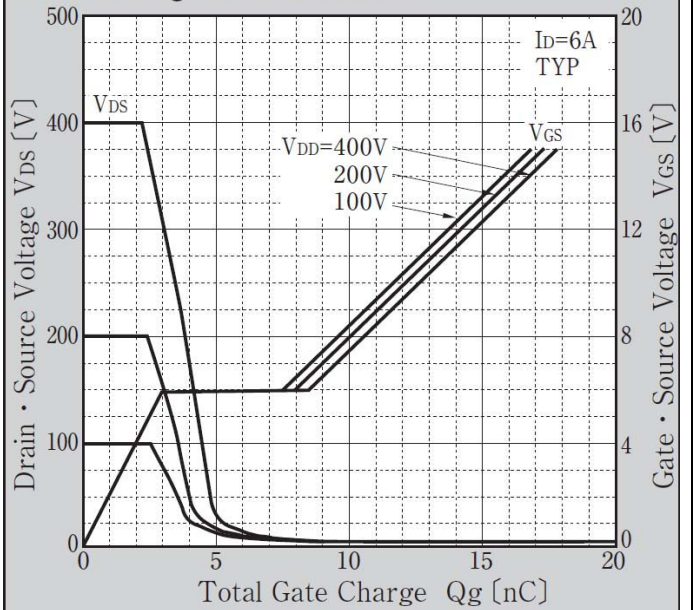




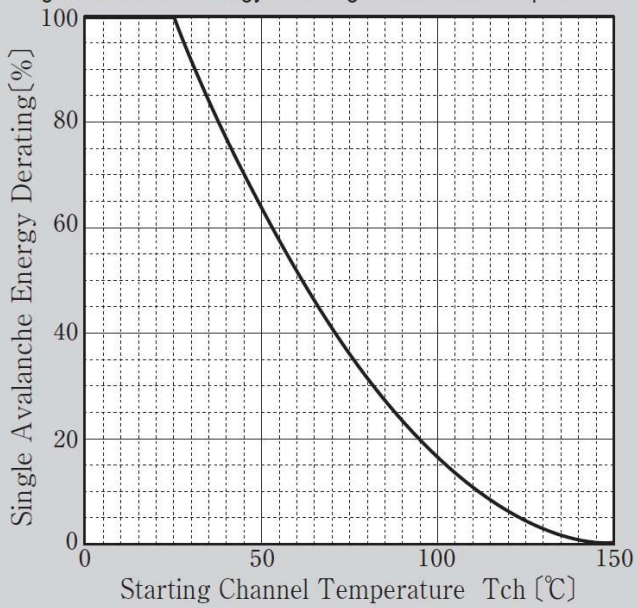
Power Derating - Case Temperature



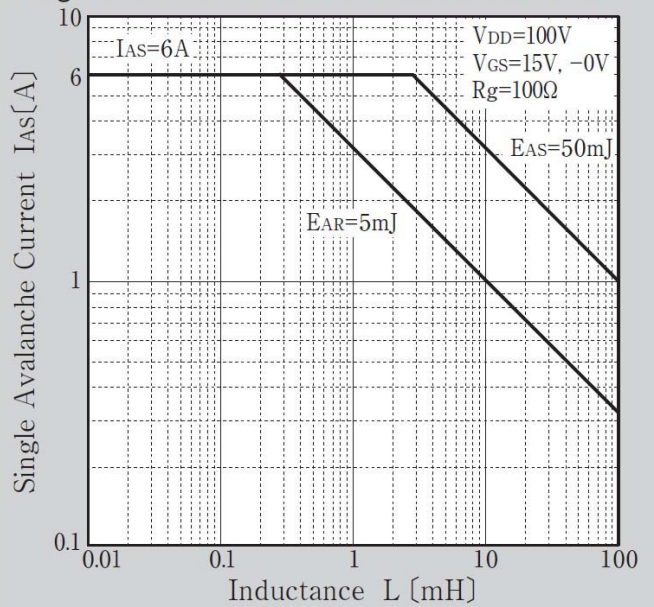
Gate Charge Characteristics



Single Avalanche Energy Derating vs Channel Temperature

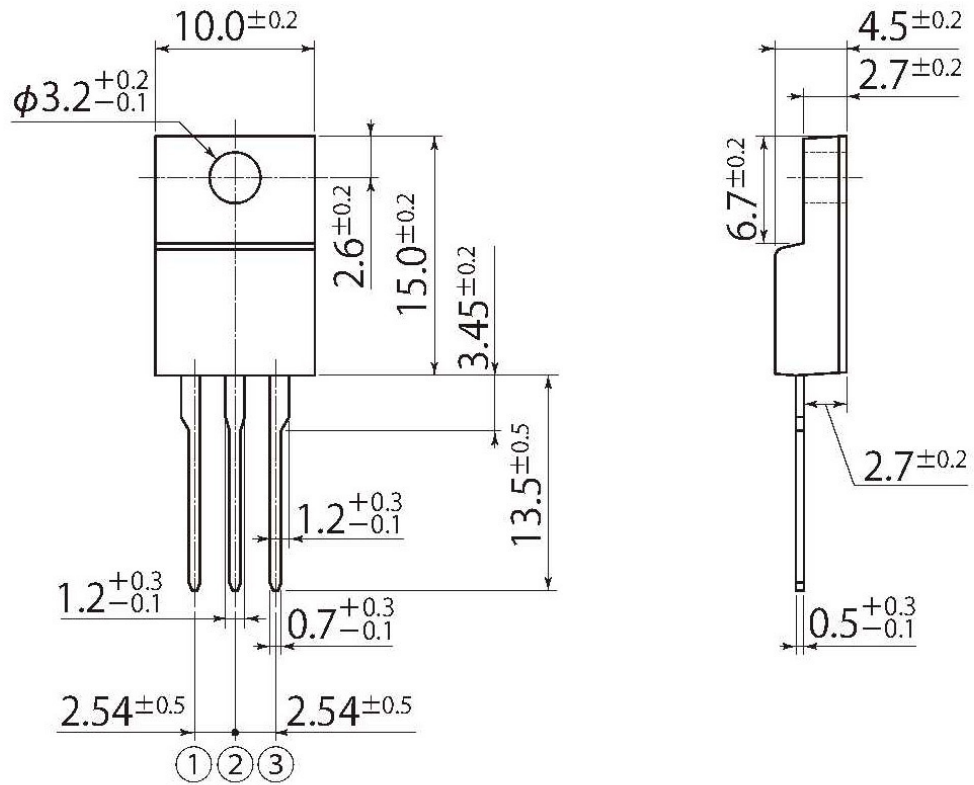


Single Avalanche Current vs Inductive Load



J8

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



## Notes

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