

P86F6SN

Power MOSFETs

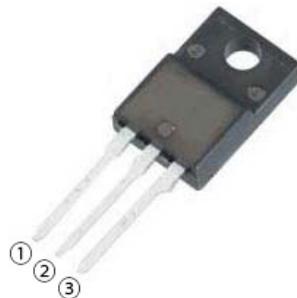
60V, 86A, N-channel

Feature

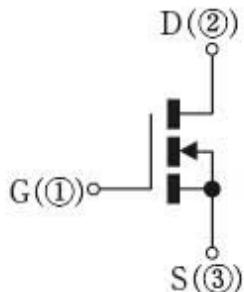
- N-channel
- Isolated Package
- Low Ron
- 10V Gate Drive
- Low Capacitance
- Pb free terminal
- RoHS:Yes

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	T _{stg}		-55 to 150	°C
Channel temperature	T _{ch}		150	°C
Drain-source voltage	V _{DSS}		60	V
Gate-source voltage	V _{GSS}		±20	V
Continuous drain current(DC)	I _D		86	A
Continuous drain current(Peak)	I _{DP}	Pulse width 10μs, duty=1/100	344	A
Total power dissipation	P _T		58	W
Single avalanche current	I _{AS}	Starting T _{ch} =25°C T _{ch} ≤150°C	76	A
Single avalanche energy	E _{AS}	Starting T _{ch} =25°C T _{ch} ≤150°C	288	mJ
Dielectric strength	V _{dis}	Terminals to case, AC1min	2	kV
Mounting torque	T _{OR}	(Recommended torque : 0.3N·m)	0.5	N·m

※ :See the original Specifications

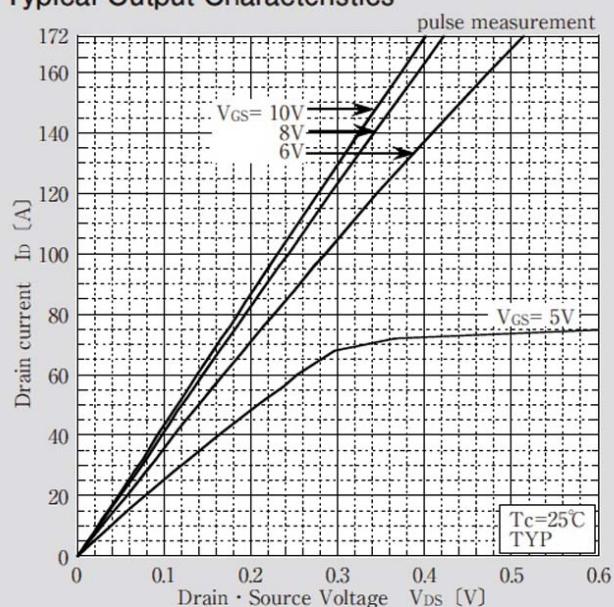
Electrical Characteristics (unless otherwise specified : $T_c=25^\circ\text{C}$)

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	$V_{(\text{BR})\text{DSS}}$	$ \text{D} =1\text{mA}, \text{VGS}=0\text{V}$	60			V
Zero gate voltage drain current	I_{DSS}	$\text{VDS}=60\text{V}, \text{VGS}=0\text{V}$			1	μA
Gate-source leakage current	I_{GSS}	$\text{VGS}=\pm 20\text{V}, \text{VDS}=0\text{V}$			± 0.1	μA
Forward transconductance	g_{fs}	$ \text{D} =43\text{A}, \text{VDS}=10\text{V}$	30			S
Static drain-source on-state resistance	$R_{\text{DS}(\text{ON})}$	$ \text{D} =43\text{A}, \text{VGS}=10\text{V}$		0.0024	0.003	Ω
Gate threshold voltage	V_{th}	$ \text{D} =1\text{mA}, \text{VDS}=10\text{V}$	2	3	4	V
Source-drain diode forward voltage	V_{SD}	$ \text{S} =86\text{A}, \text{VGS}=0\text{V}$			1.5	V
Thermal resistance	$R_{\text{th}}(\text{j-c})$	Junction to case			2.15	$^\circ\text{C}/\text{W}$
Total gate charge	Q_g	$\text{VDD}=48\text{V}, \text{VGS}=10\text{V}, \text{D} =86\text{A}$		181		nC
Gate to source charge	Q_{gs}	$\text{VDD}=48\text{V}, \text{VGS}=10\text{V}, \text{D} =86\text{A}$		46		nC
Gate to drain charge	Q_{gd}	$\text{VDD}=48\text{V}, \text{VGS}=10\text{V}, \text{D} =86\text{A}$		68		nC
Input capacitance	C_{iss}	$\text{VDS}=25\text{V}, \text{VGS}=0\text{V}, f=1\text{MHz}$		9380		pF
Reverse transfer capacitance	C_{rss}	$\text{VDS}=25\text{V}, \text{VGS}=0\text{V}, f=1\text{MHz}$		570		pF
Output capacitance	C_{oss}	$\text{VDS}=25\text{V}, \text{VGS}=0\text{V}, f=1\text{MHz}$		1190		pF
Turn-on delay time	$t_{\text{d}(\text{on})}$	$ \text{D} =43\text{A}, \text{RL}=0.7\Omega, \text{VDD}=30\text{V}, \text{Rg}=0\Omega, \text{VGS}(+)=10\text{V}, \text{VGS}(-)=0\text{V}$		14		ns
Rise time	t_r	$ \text{D} =43\text{A}, \text{RL}=0.7\Omega, \text{VDD}=30\text{V}, \text{Rg}=0\Omega, \text{VGS}(+)=10\text{V}, \text{VGS}(-)=0\text{V}$		49		ns
Turn-off delay time	$t_{\text{d}(\text{off})}$	$ \text{D} =43\text{A}, \text{RL}=0.7\Omega, \text{VDD}=30\text{V}, \text{Rg}=0\Omega, \text{VGS}(+)=10\text{V}, \text{VGS}(-)=0\text{V}$		112		ns
Fall time	t_f	$ \text{D} =43\text{A}, \text{RL}=0.7\Omega, \text{VDD}=30\text{V}, \text{Rg}=0\Omega, \text{VGS}(+)=10\text{V}, \text{VGS}(-)=0\text{V}$		70		ns
Diode reverse recovery time	t_{rr}	$ \text{F} =86\text{A}, \text{VGS}=0\text{V}, \text{di}/\text{dt}=100\text{A}/\mu\text{s}$		57		ns
Diode reverse recovery charge	Q_{rr}	$ \text{F} =86\text{A}, \text{VGS}=0\text{V}, \text{di}/\text{dt}=100\text{A}/\mu\text{s}$		104		nC

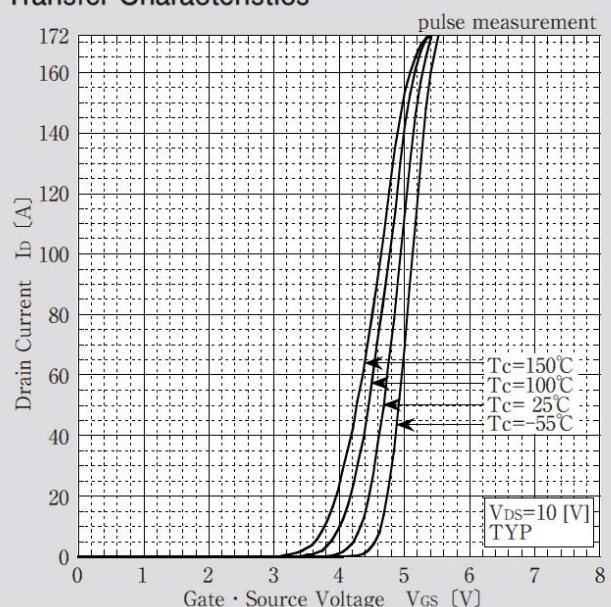
※ : See the original Specifications

CHARACTERISTIC DIAGRAMS

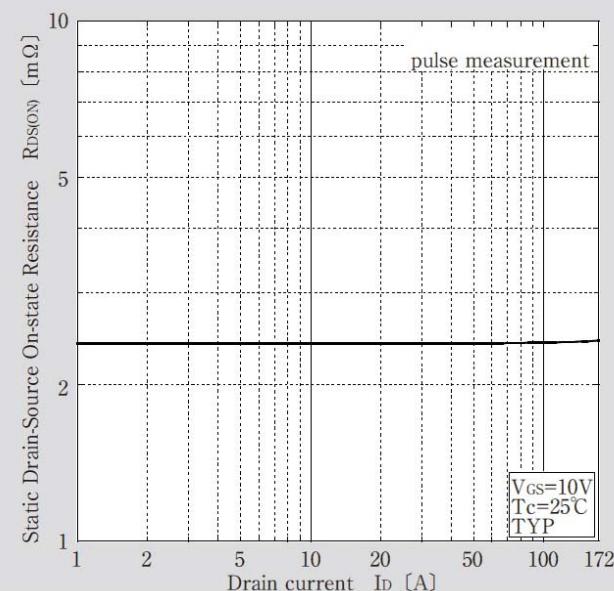
Typical Output Characteristics



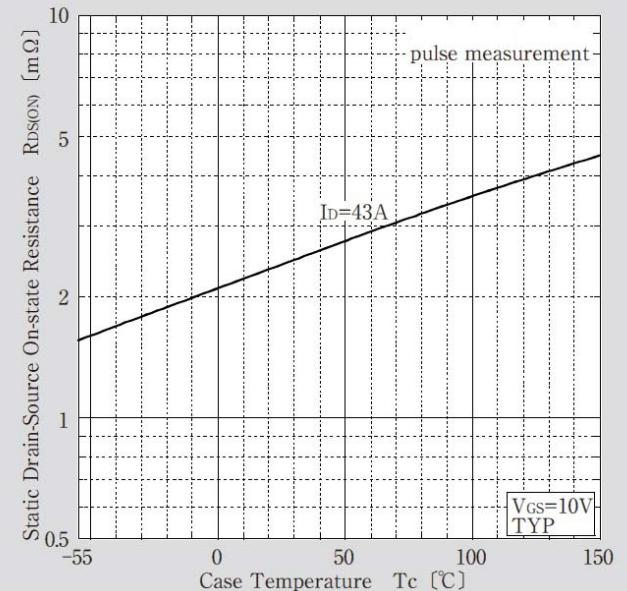
Transfer Characteristics



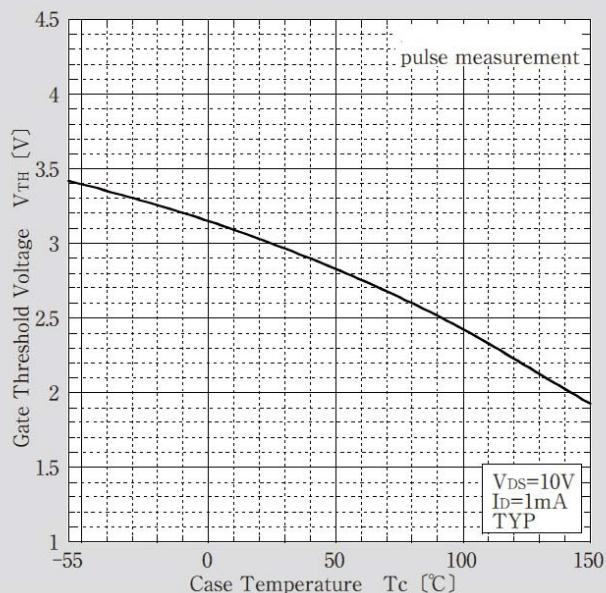
Static Drain-Source On-state Resistance vs Drain Current



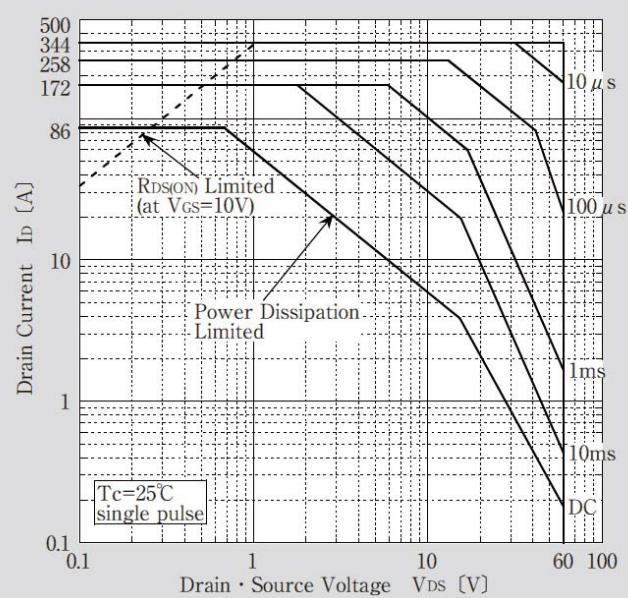
Static Drain-Source On-state Resistance vs Case Temperature



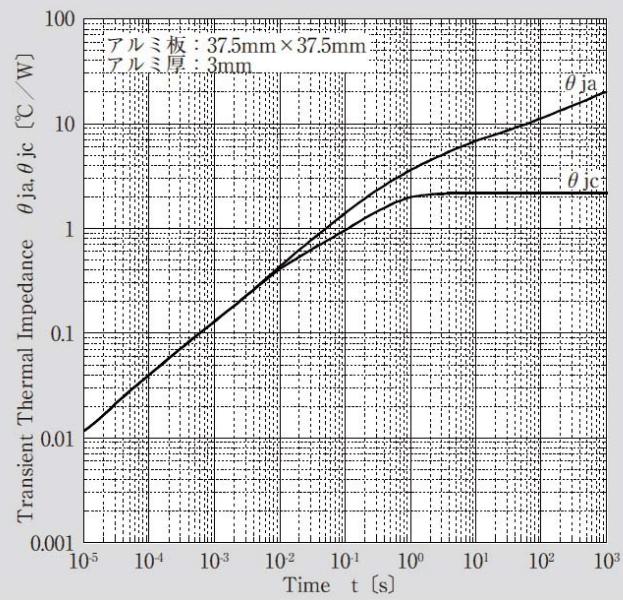
Gate Threshold Voltage vs Case Temperature



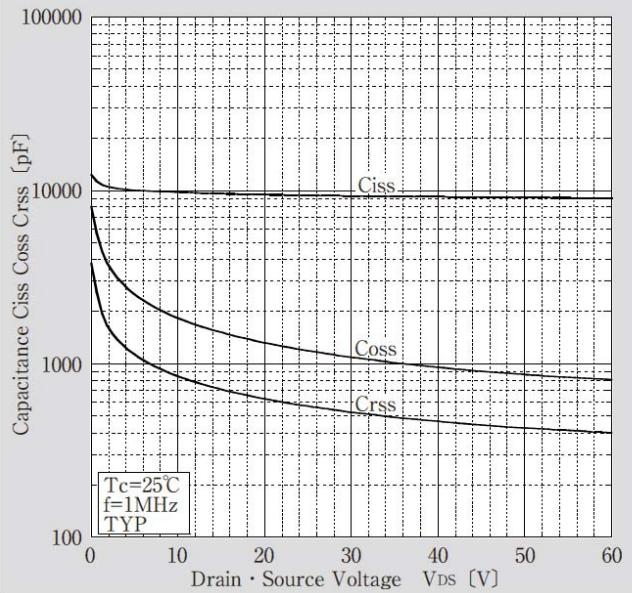
Safe Operating Area



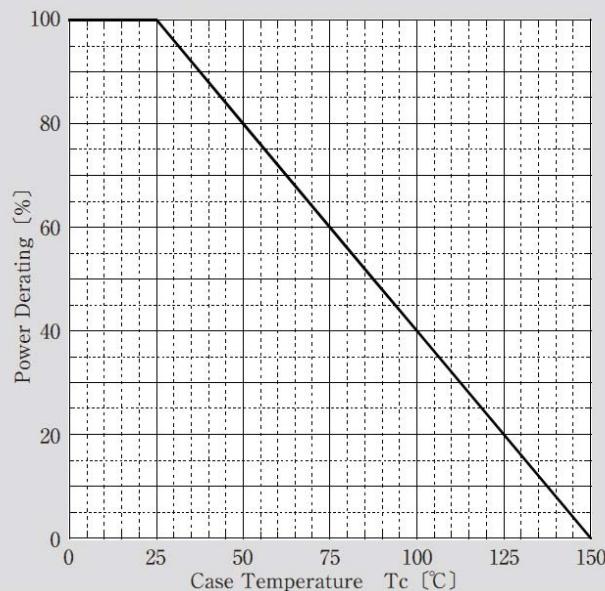
Transient Thermal Impedance



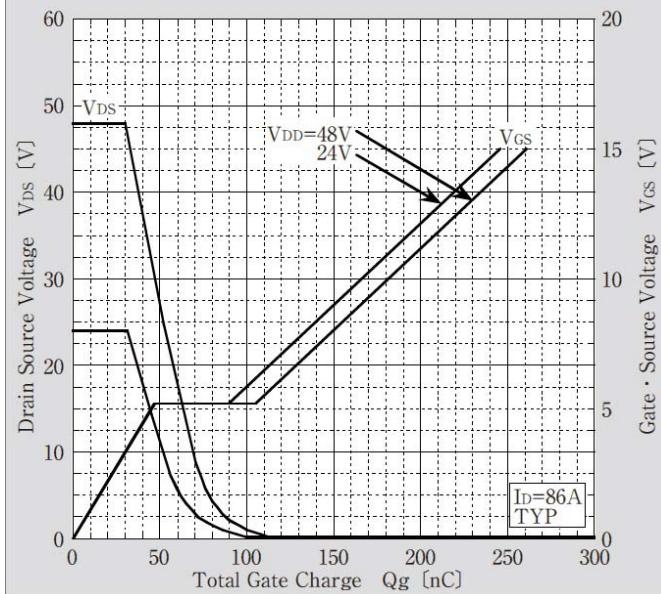
Capacitance Characteristics



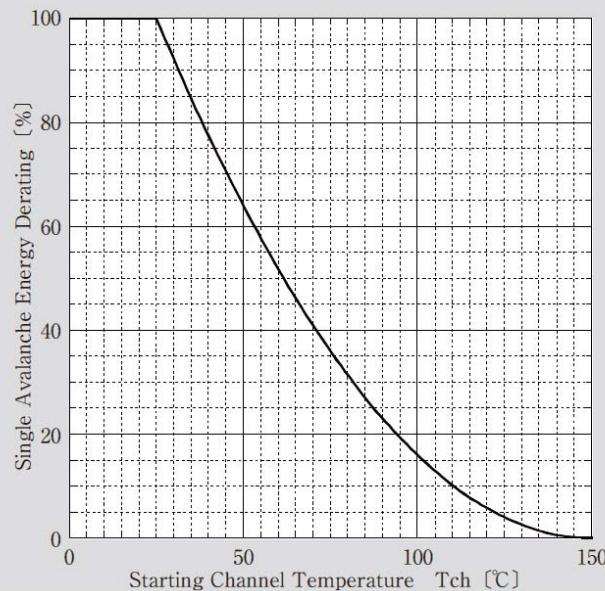
Power Derating - Case Temperature



Gate Charge Characteristics



Single Avalanche Energy Derating vs Channel Temperature

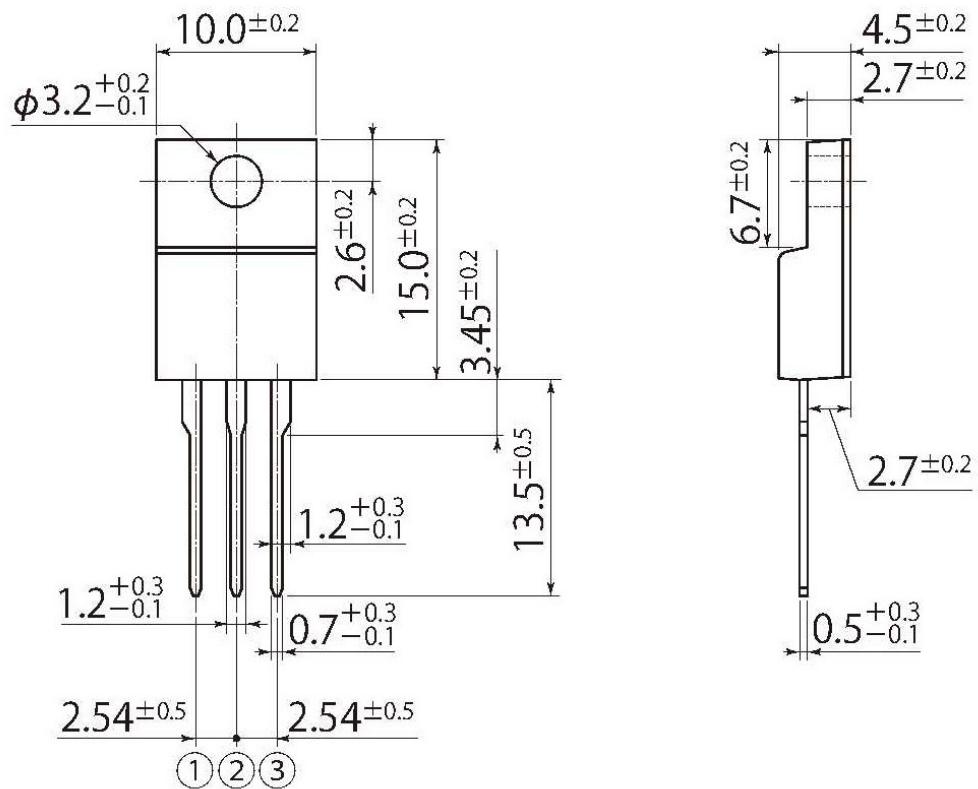


Outline Dimensions

unit:mm

J8

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



Notes

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