ShinDengen

P23F40HP2FM

Power MOSFETs
400V, 23A, N-channel

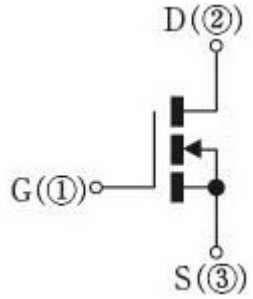
Feature

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

OUTLINE

Package (House Name): FTO-220A
Package (JEITA Code): SC-91

Equivalent circuit



Absolute Maximum Ratings (unless otherwise specified : Tc=25℃)

Item	Symbol	Conditions	Ratings	Unit
Storage temperature	Tstg		-55 to 150	℃
Channel tempertature	Tch		150	℃
Drain-source voltage	V_{DSS}		400	V
Gate-source voltage	V_{GSS}		±30	V
Continuous drain current(DC)	I_D		23	A
Continuous drain current(Peak)	I_{DP}	Pulse width 10μs, duty=1/100	92	A
Continuous source current(DC)	Is		23	A
Total power dissipation	P_T		104	W
Repetitive avalanche current	I_{AR}	Starting Tch=25℃ Tch≦150℃	23	A
Single avalanche energy	E_{AS}	Starting Tch=25℃ Tch≦150℃	65	mJ
Repetitive avalanche energy	E_{AR}	Starting Tch=25℃ Tch≦150℃	6.5	mJ
Drain-source diode di/dt strength	di/dt	Is=23A, Tc=25℃	350	A/μs
Dielectric strenght	Vdis	Terminals to case, AC1min	2	kV
Mounting torque	TOR	(Recommended torque：0.3N･m)	0.5	N･m

※ ：See the original Specifications

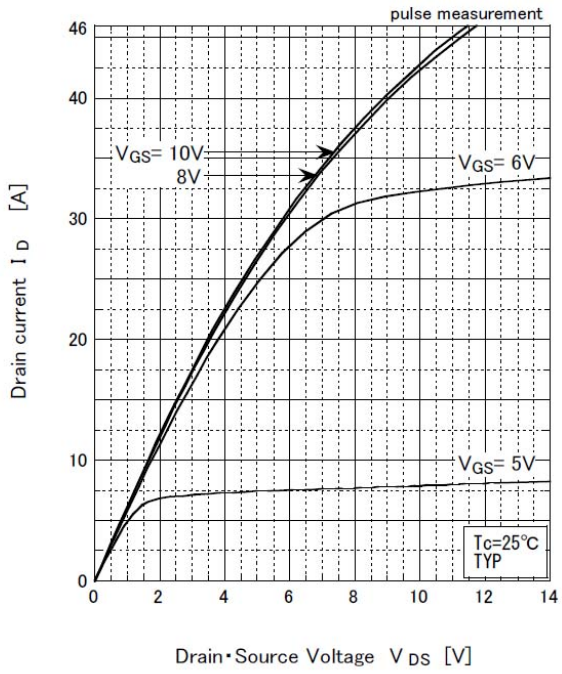
Electrical Characteristics (unless otherwise specified : Tc=25℃)

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	ID=1mA, VGS=0V	400			V
Zero gate voltage drain current	I_{DSS}	VDS=400V, VGS=0V			100	μA
Gate-source leakage current	I_{GSS}	VGS=±30V, VDS=0V			±0.1	μA
Forward transconductance	g_{fs}	ID=11.5A, VDS=10V	10	20		S
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=11.5A, VGS=10V		0.17	0.24	Ω
Gate threshold voltage	Vth	ID=1mA, VDS=10V	2	3.25	4.5	V
Source-drain diode forward voltage	V_{SD}	IS=11.5A, VGS=0V			1.5	V
Thermal resistance	Rth(j-c)	Junction to case			1.2	℃/W
Total gate charge	Qg	VDD=320V, VGS=10V, ID=23A		40		nC
Input capacitance	Ciss	VDS=50V, VGS=0V, f=1MHz		1620		pF
Reverce transfer capacitnce	Crss	VDS=50V, VGS=0V, f=1MHz		12		pF
Output capacitance	Coss	VDS=50V, VGS=0V, f=1MHz		190		pF
Turn-on delay time	td(on)	ID=11.5A, RL=13Ω, VDD=150V, Rg=50Ω, VGS(+)=10V, VGS(-)=0V		32		ns
Rise time	tr	ID=11.5A, RL=13Ω, VDD=150V, Rg=50Ω, VGS(+)=10V, VGS(-)=0V		78		ns
Turn-off delay time	td(off)	ID=11.5A, RL=13Ω, VDD=150V, Rg=50Ω, VGS(+)=10V, VGS(-)=0V		184		ns
Fall time	tf	ID=11.5A, RL=13Ω, VDD=150V, Rg=50Ω, VGS(+)=10V, VGS(-)=0V		68		ns
Diode reverse recovery time	trr	IF=23A, di/dt=100A/μs		68		ns

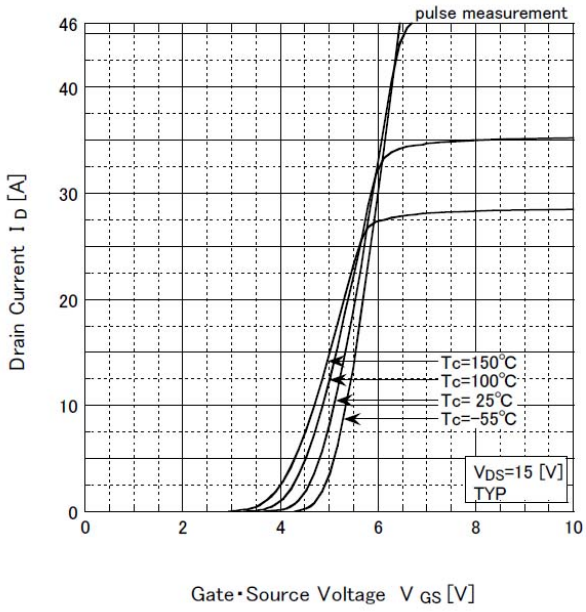
※ ：See the original Specifications

CHARACTERISTIC DIAGRAMS

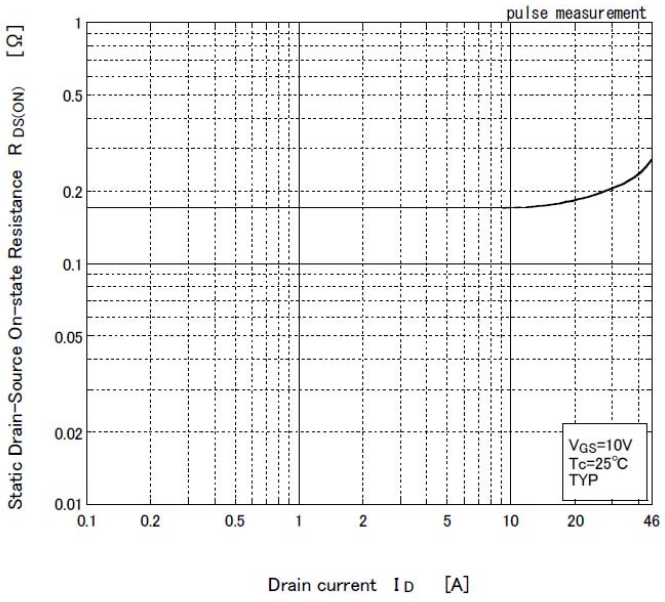
Typical Output Characteristics



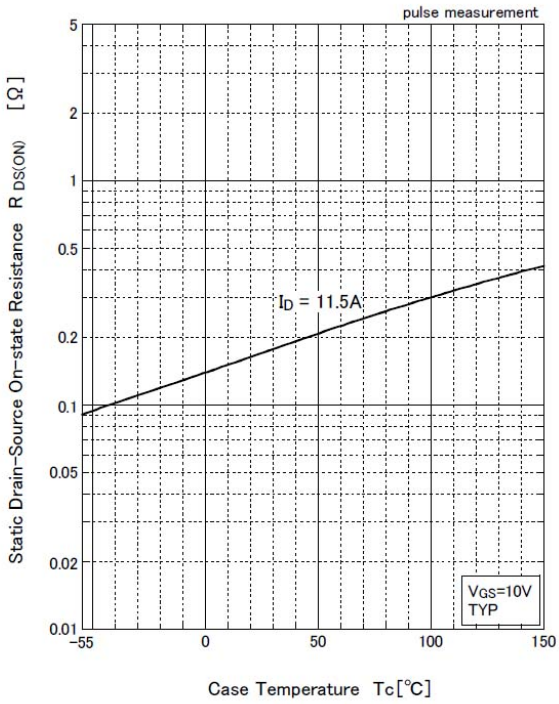
Transfer Characteristics



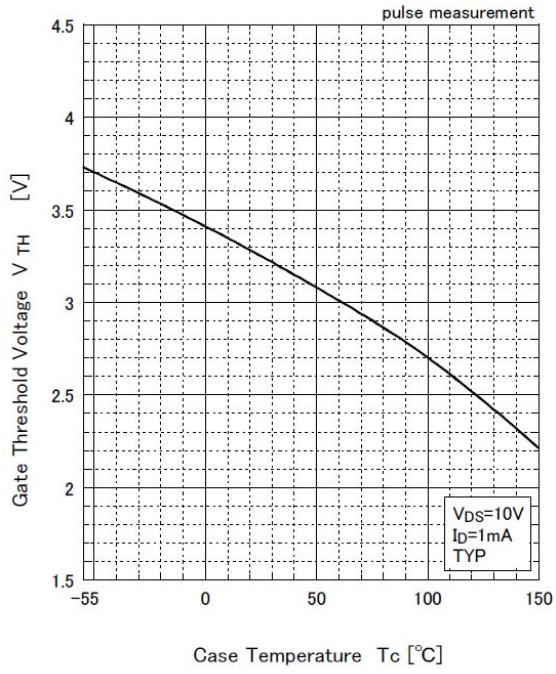
Static Drain-Source On-state Resistance vs Drain Current



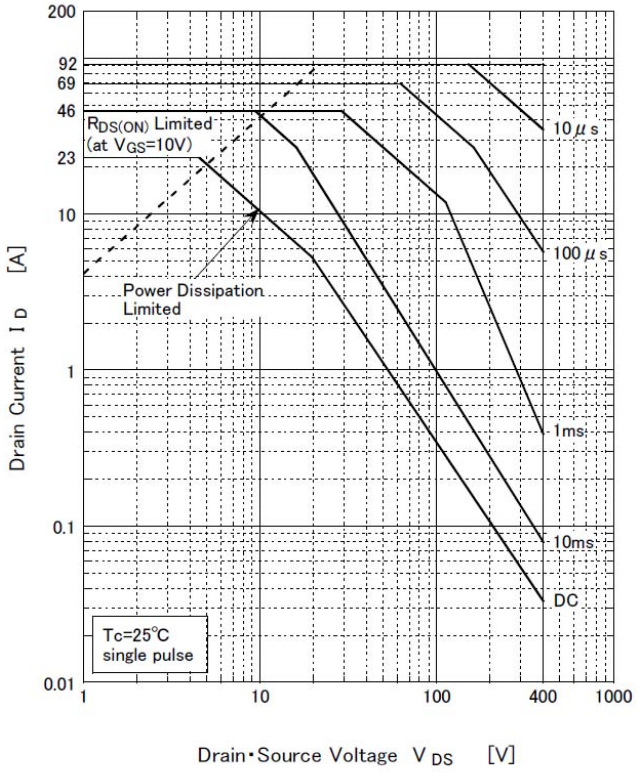
Static Drain-Source On-state Resistance vs Case Temperature

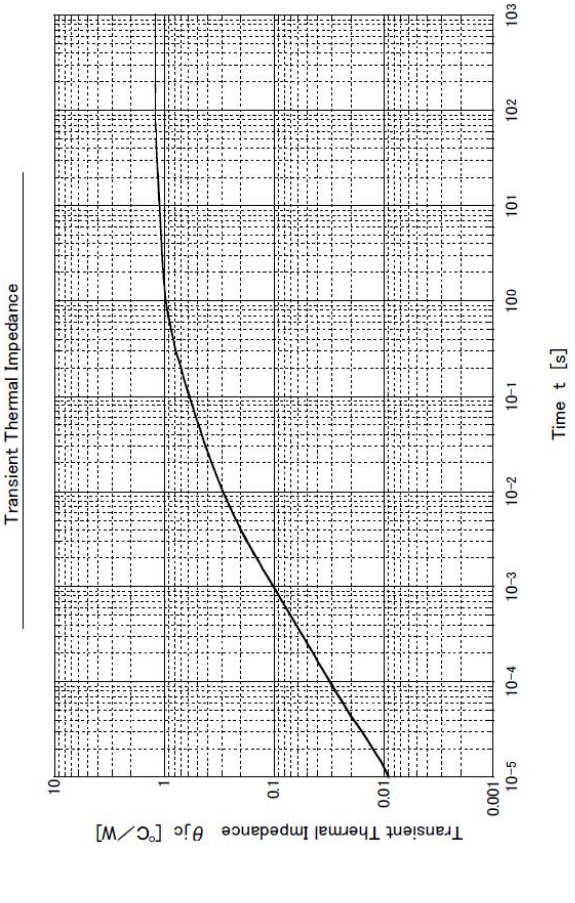


Gate Threshold Voltage
vs Case Temperature

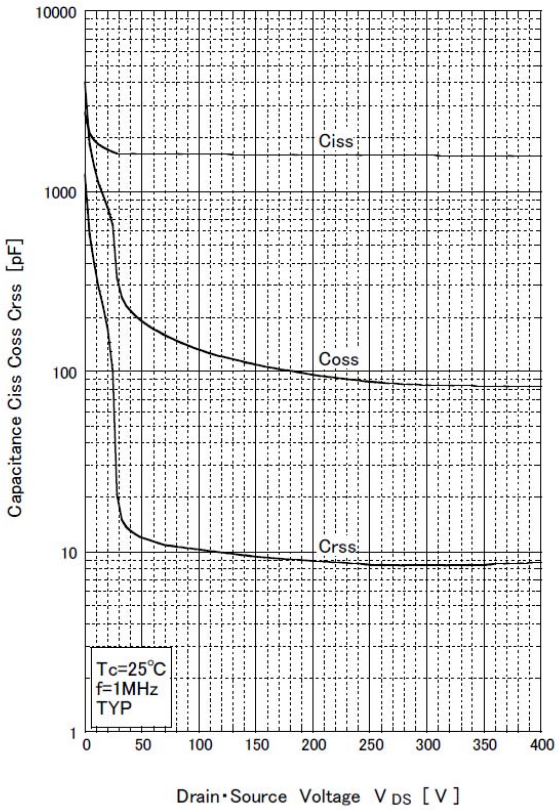


Safe Operating Area

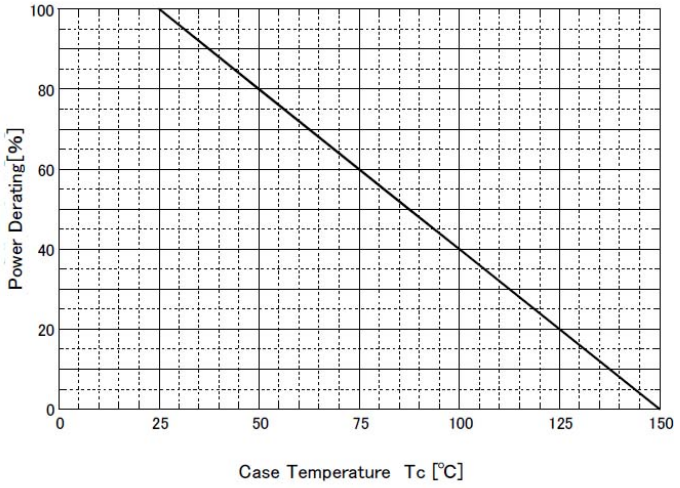




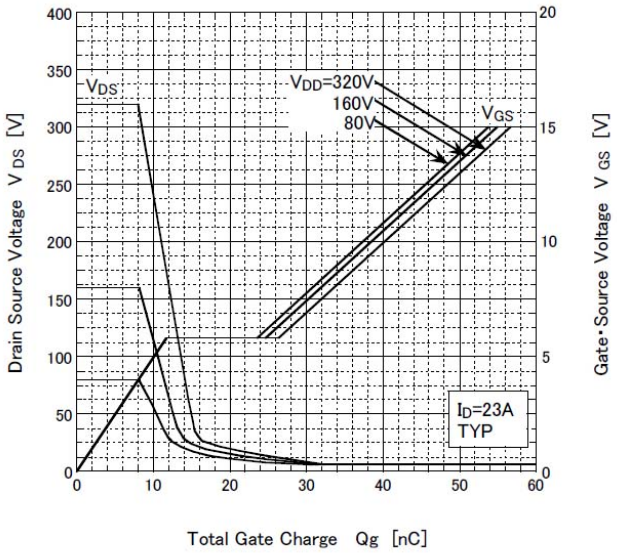
Capacitance Characteristics



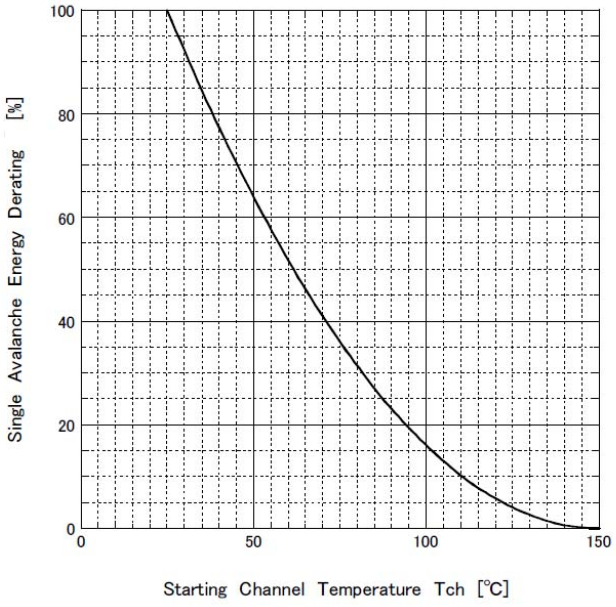
Power Derating - Case Temperature



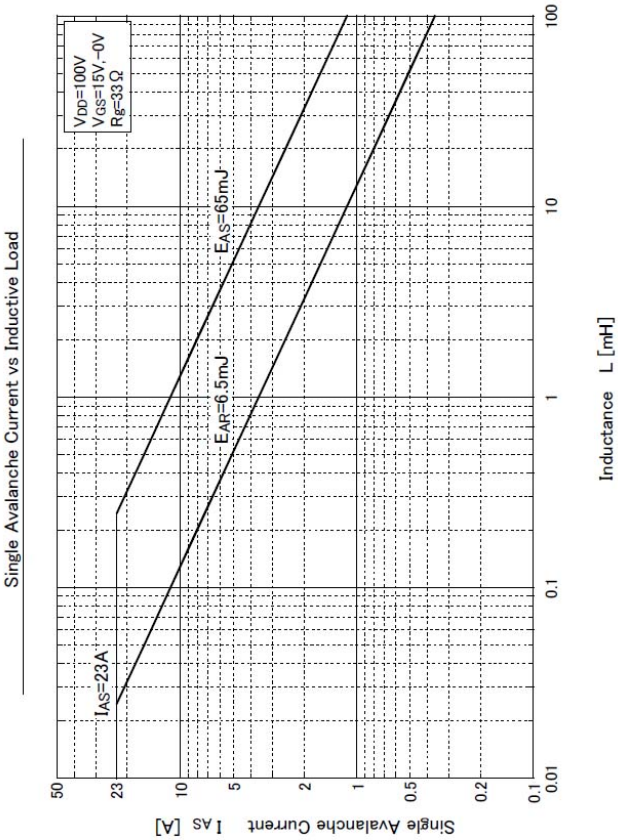
Gate Charge Characteristics



Single Avalanche Energy Derating vs Channel Temperature



Single Avalanche Current vs Inductive Load

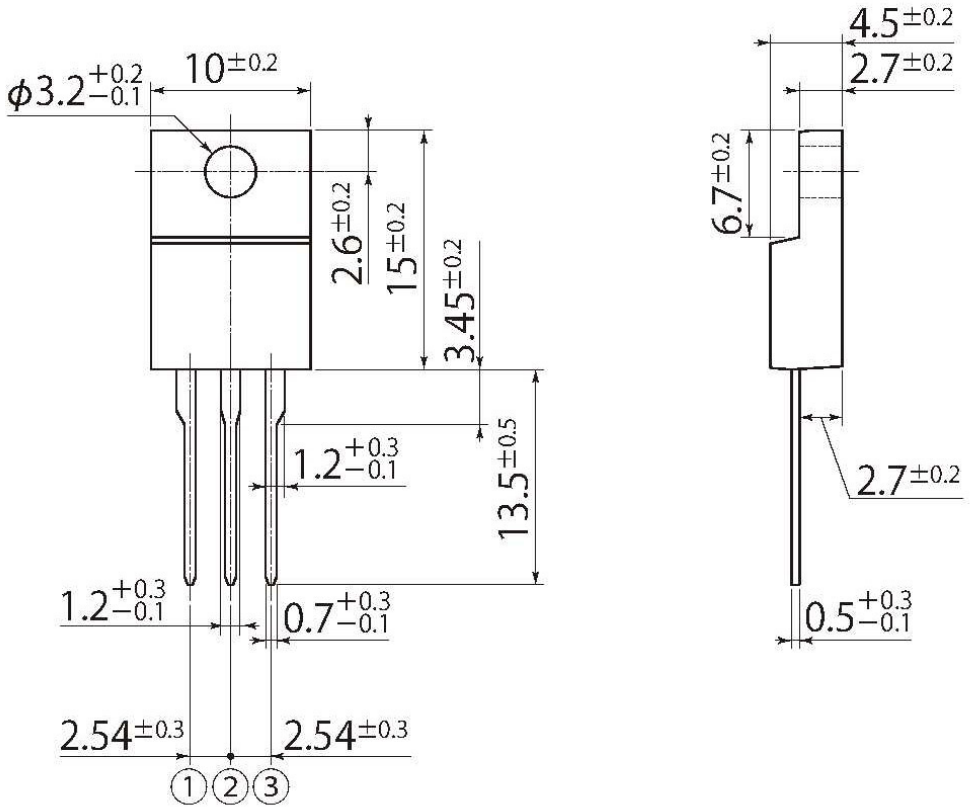


Outline Dimensions

unit:mm

J7

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



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