P40B6SL

Power MOSFETs
60V, 40A, N-channel

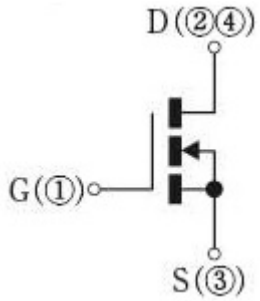
Feature

- N-channel
- SMD
- Low Ron
- 4.5V Gate Drive
- Low Capacitance
- Pb free terminal
- RoHS:Yes

OUTLINE

Package (House Name): FB
Package (JEDEC Code): TO-252AA

Equivalent circuit



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

Item	Symbol	Conditions	Ratings	Unit
Storage temperrature	Tstg		-55 to 150	℃
Channel tempertature	Tch		150	℃
Drain-source voltage	V_{DSS}		60	V
Gate-source voltage	V_{GSS}		±20	V
Continuous drain current(DC)	I_D		40	A
Continuous drain current(Peak)	I_{DP}	Pulse width 10μs, duty=1/100	120	A
Total power dissipation	P_T		44	W
Single avalanche current	I_{AS}	Starting Tch=25℃ Tch≦150℃	23	A
Single avalanche energy	E_{AS}	Starting Tch=25℃ Tch≦150℃	54	mJ

※ :See the original Specifications

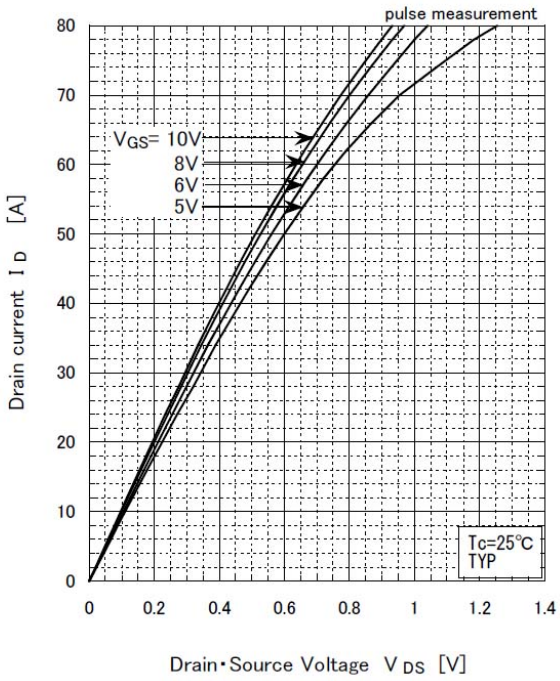
Electrical Characteristics (unless otherwise specified : Tc=25℃)

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	ID=1mA, VGS=0V	60			V
Zero gate voltage drain current	I_{DSS}	VDS=60V, VGS=0V			1	μA
Gate-source leakage current	I_{GSS}	VGS=±20V, VDS=0V			±0.1	μA
Forward transconductance	g_{fs}	ID=20A, VDS=10V	9			S
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=20A, VGS=10V		0.0095	0.012	Ω
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=20A, VGS=4.5V		0.012	0.016	Ω
Gate threshold voltage	Vth	ID=1mA, VDS=10V	1.5	2	2.5	V
Source-drain diode forward voltage	V_{SD}	IS=40A, VGS=0V			1.5	V
Thermal resistance	Rth(j-c)	Junction to case			2.84	℃/W
Total gate charge	Qg	VDD=48V, VGS=10V, ID=40A		43		nC
Gate to source charge	Qgs	VDD=48V, VGS=10V, ID=40A		8.5		nC
Gate to drain charge	Qgd	VDD=48V, VGS=10V, ID=40A		10		nC
Input capacitance	Ciss	VDS=25V, VGS=0V, f=1MHz		2050		pF
Reverce transfer capacitnce	Crss	VDS=25V, VGS=0V, f=1MHz		110		pF
Output capacitance	Coss	VDS=25V, VGS=0V, f=1MHz		216		pF
Turn-on delay time	td(on)	ID=20A, RL=1.5Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		6		ns
Rise time	tr	ID=20A, RL=1.5Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		18		ns
Turn-off delay time	td(off)	ID=20A, RL=1.5Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		29		ns
Fall time	tf	ID=20A, RL=1.5Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		17		ns
Diode reverse recovery time	trr	IF=40A, VGS=0V, di/dt=100A/μs		42		ns
Diode reverse recovery charge	Qrr	IF=40A, VGS=0V, di/dt=100A/μs		51		nC

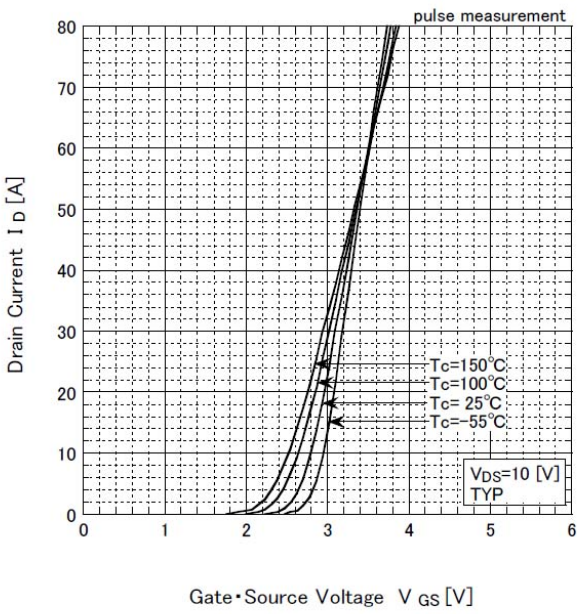
※ ：See the original Specifications

CHARACTERISTIC DIAGRAMS

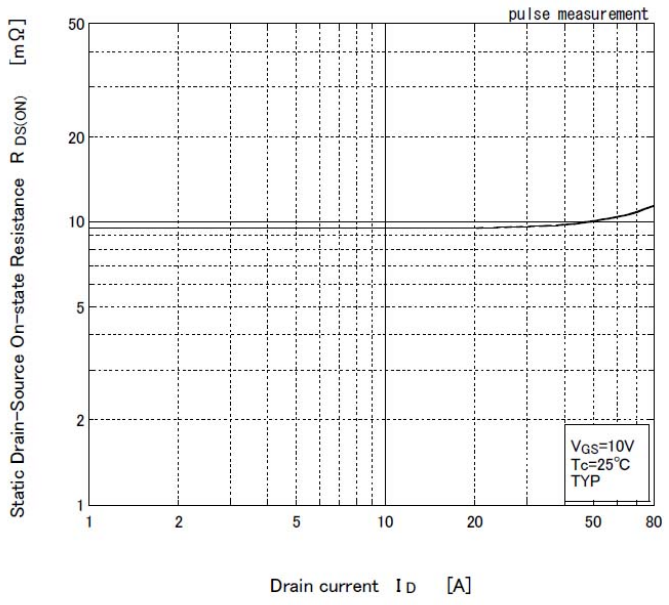
Typical Output Characteristics



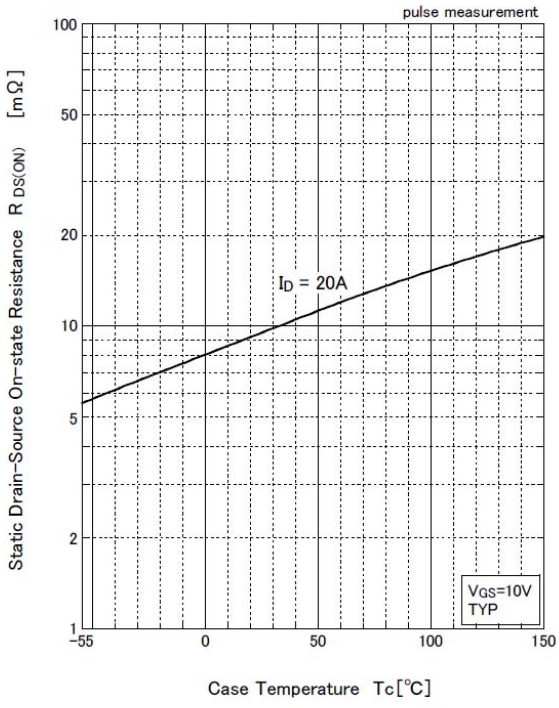
Transfer Characteristics



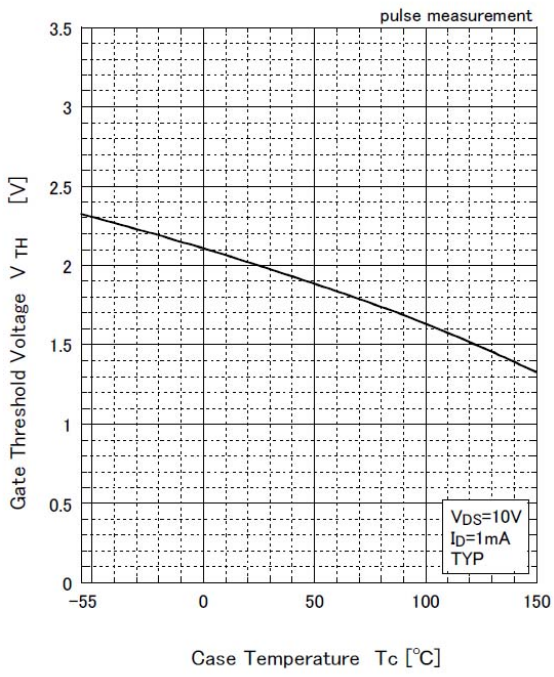
Static Drain-Source On-state Resistance vs Drain Current



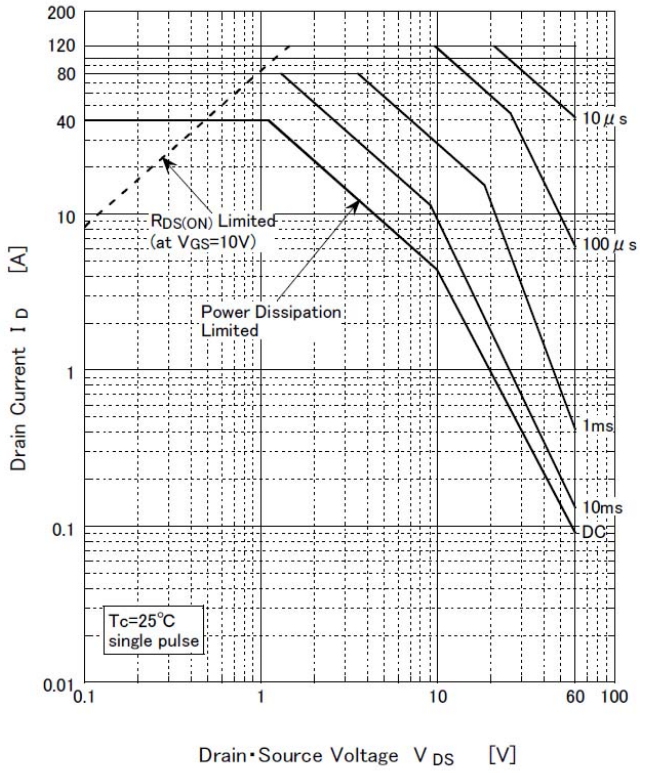
Static Drain-Source On-state Resistance vs Case Temperature

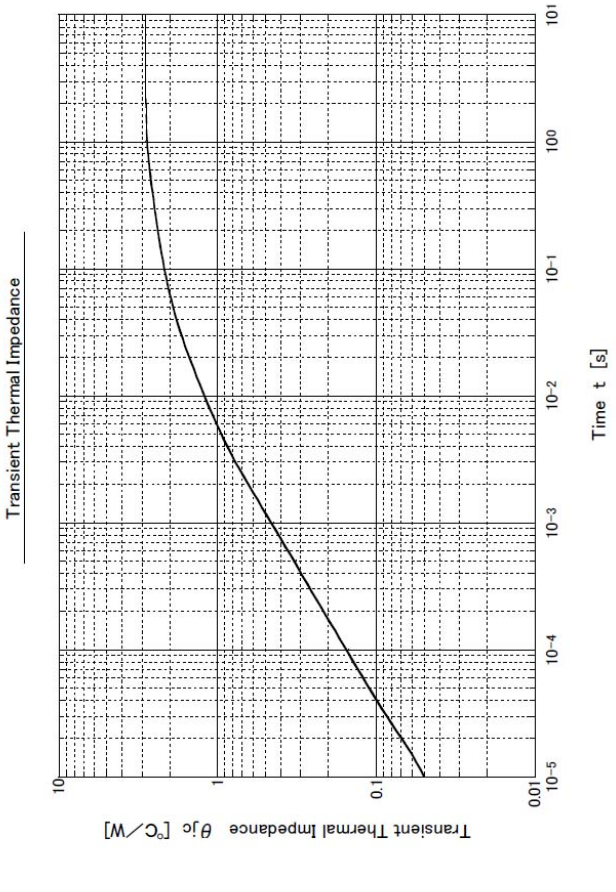


Gate Threshold Voltage
vs Case Temperature

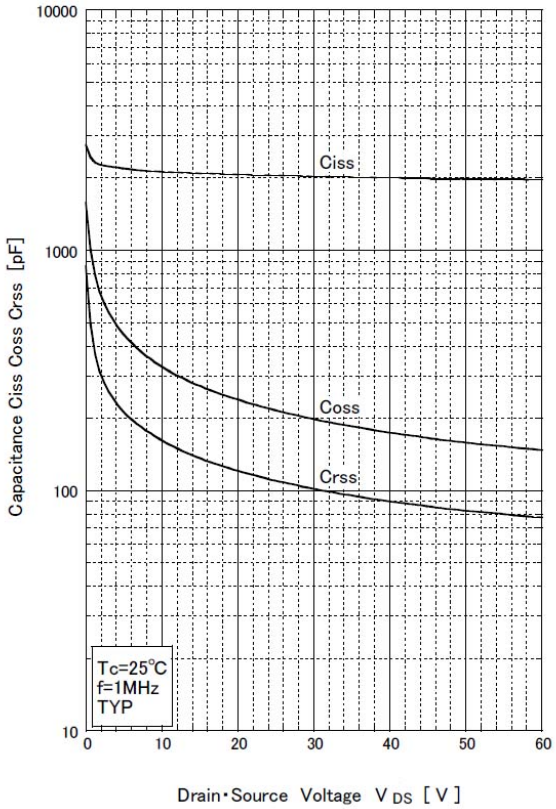


Safe Operating Area

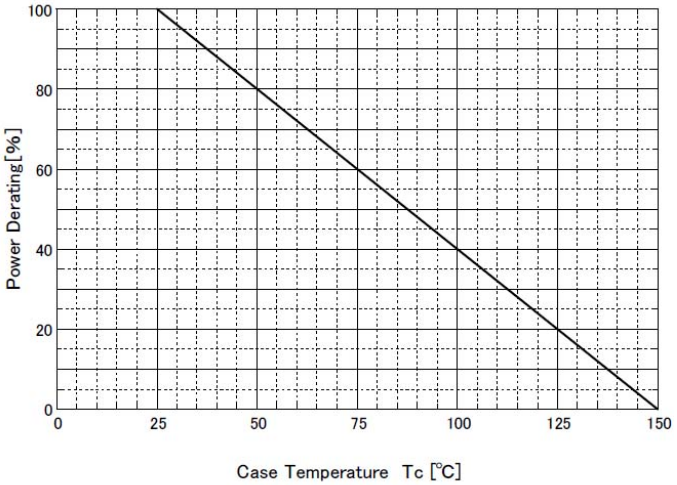




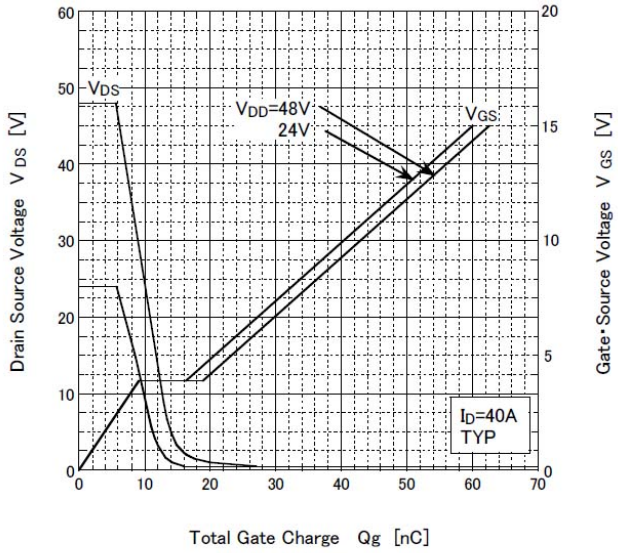
Capacitance Characteristics



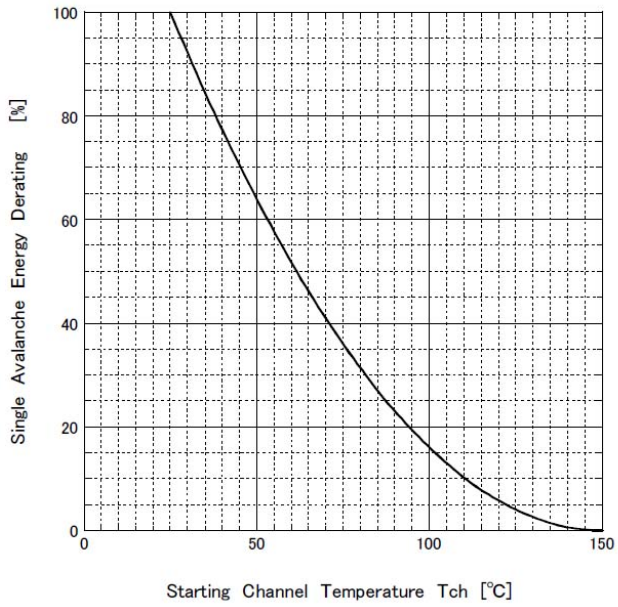
Power Derating - Case Temperature



Gate Charge Characteristics



Single Avalanche Energy Derating
vs Channel Temperature



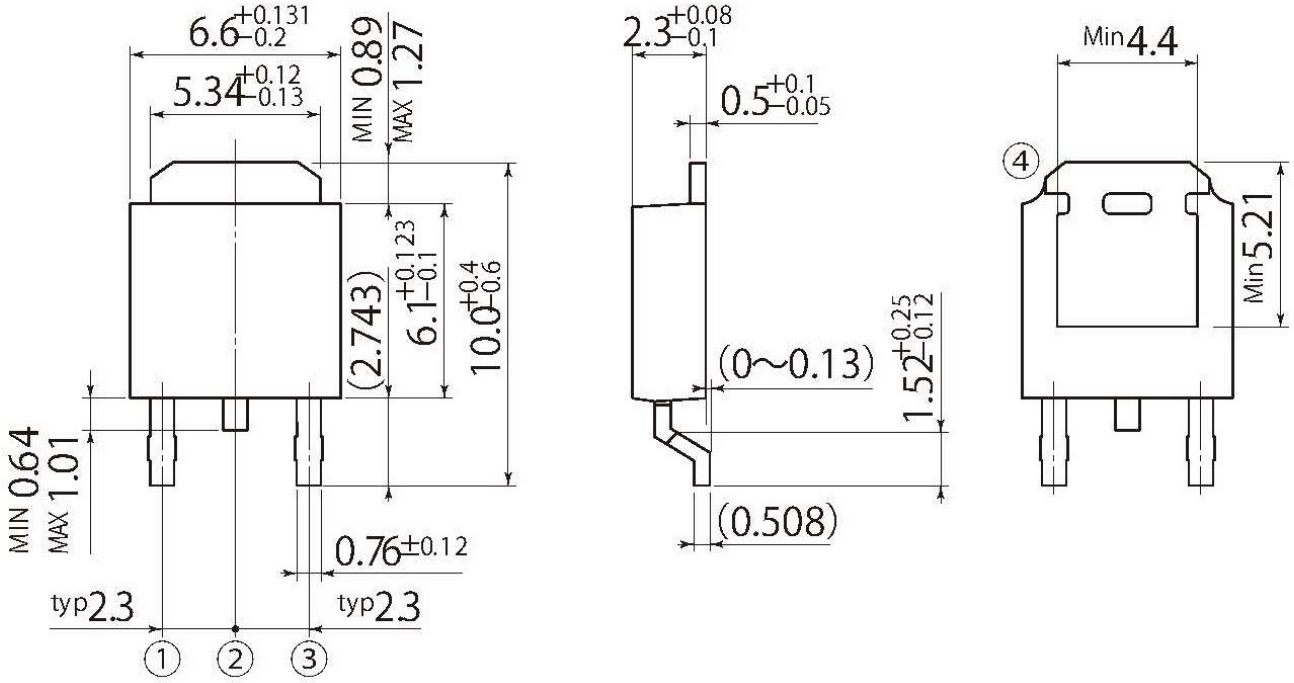
Outline Dimensions

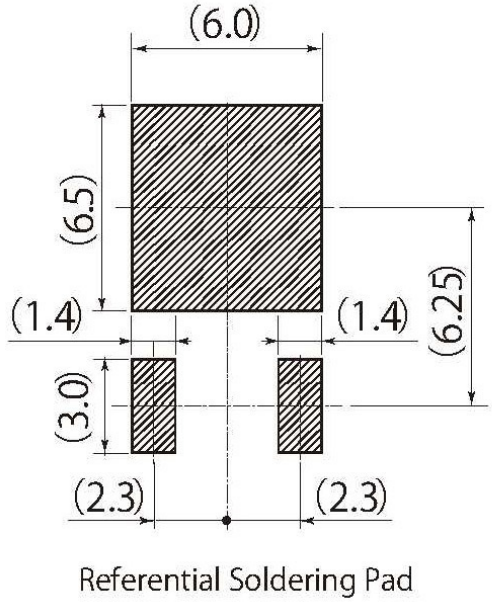
unit:mm

scale: 4/1

G2

JEDEC Code	TO-252AA
JEITA Code	–
House Name	FB





Referential Soldering Pad

・Optimize soldering pad to the board design and soldering condition.

Notes

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