

P14FE6SBK

Power MOSFETs
60V, 14A, N-channel

Feature

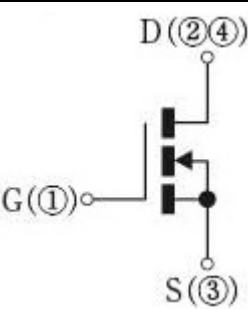
- N-channel
- SMD
- Low Ron
- 4.5V Gate Drive
- Low Capacitance
- Based on AEC-Q103
- Pb free terminal
- RoHS:Yes

OUTLINE

Package (House Name): FE
Package (JEDEC Code): TO-252AB similar
Package (JEITA Code): SC-63



Equivalent circuit



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

Item	Symbol	Conditions	Ratings	Unit
Storage temperature	Tstg		-55 to 175	°C
Channel tempertature	Tch		-55 to 175	°C
Drain-source voltage	V _{DSS}		60	V
Gate-source voltage	V _{GSS}		±20	V
Continuous drain current(DC)	I _D		14	A
Continuous drain current(Peak)	I _{DP}	Pulse width 10μs, duty=1/100	42	A
Total power dissipation	P _T		24	W
Single avalanche current	I _{AS}	Starting Tch=25°C Tch≤150°C	14	A
Single avalanche energy	E _{AS}	Starting Tch=25°C Tch≤150°C	9.8	mJ

※ :See the original Specifications

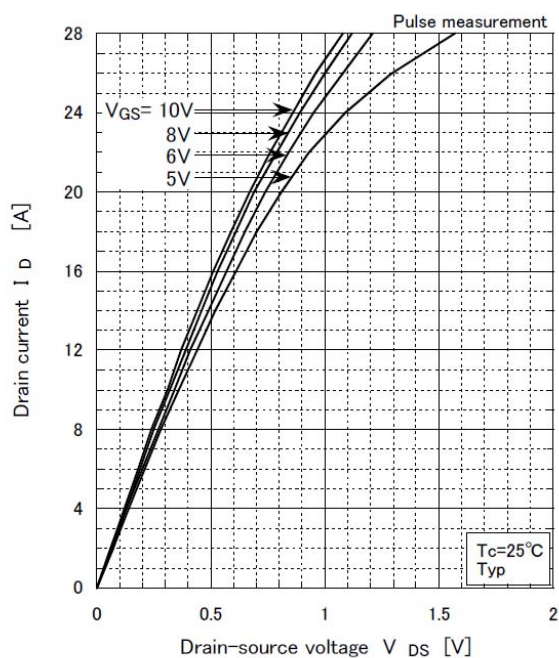
Electrical Characteristics (unless otherwise specified : Tc=25°C)

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	ID=1mA, VGS=0V	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			±10	μA
Forward transconductance	g_{fs}	ID=7A, VDS=10V	5			S
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=7A, VGS=10V		0.031	0.039	Ω
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=7A, VGS=4.5V		0.038	0.051	Ω
Gate threshold voltage	V_{th}	ID=1mA, VDS=10V	1.5	2	2.5	V
Source-drain diode forward voltage	V_{SD}	IS=14A, VGS=0V			1.5	V
Thermal resistance	$R_{th(j-c)}$	Junction to case, with heatsink ※			6.2	°C/W
Total gate charge	Q_g	VDD=48V, VGS=10V, ID=14A		16.3		nC
Gate to source charge	Q_{gs}	VDD=48V, VGS=10V, ID=14A		4.1		nC
Gate to drain charge	Q_{gd}	VDD=48V, VGS=10V, ID=14A		3.9		nC
Input capacitance	C_{iss}	VDS=25V, VGS=0V, f=1MHz		655		pF
Reverse transfer capacitance	C_{rss}	VDS=25V, VGS=0V, f=1MHz		36		pF
Output capacitance	C_{oss}	VDS=25V, VGS=0V, f=1MHz		85		pF
Turn-on delay time	$t_{d(on)}$	ID=7A, RL=4.29Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		4.5		ns
Rise time	t_r	ID=7A, RL=4.29Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		8		ns
Turn-off delay time	$t_{d(off)}$	ID=7A, RL=4.29Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		13.5		ns
Fall time	t_f	ID=7A, RL=4.29Ω, VDD=30V, Rg=0Ω, VGS(+)=10V, VGS(-)=0V		3.5		ns
Diode reverse recovery time	t_{rr}	IF=14A, VGS=0V, di/dt=100A/μs		41		ns
Diode reverse recovery charge	Q_{rr}	IF=14A, VGS=0V, di/dt=100A/μs		47		nC

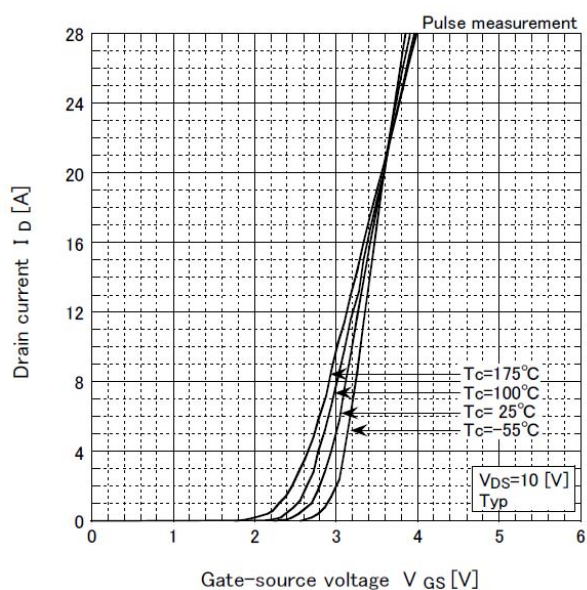
※ : See the original Specifications

CHARACTERISTIC DIAGRAMS

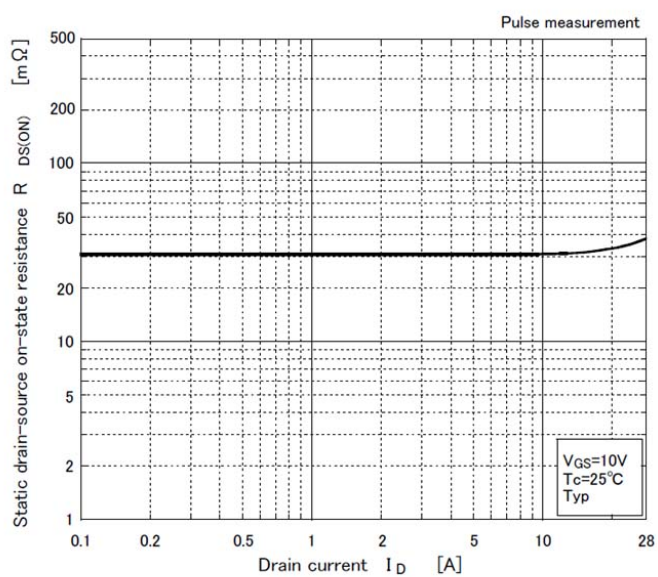
Typical output characteristics



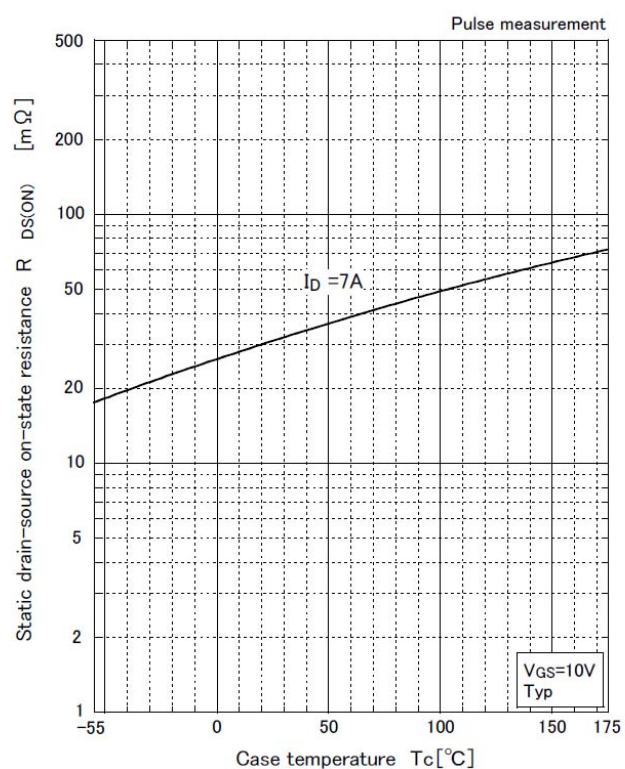
Transfer characteristics

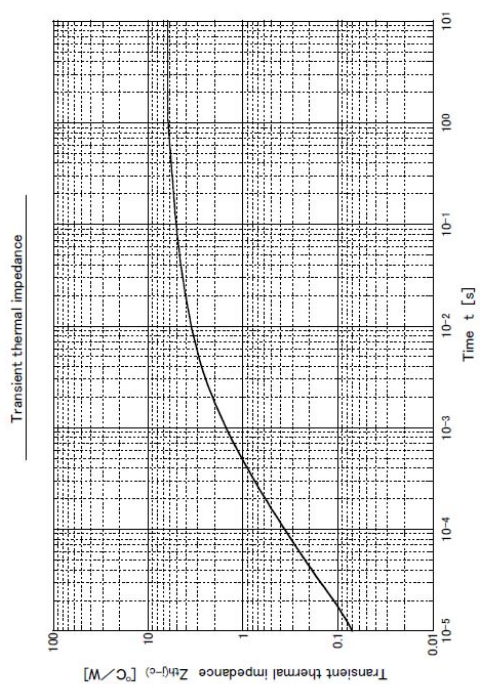
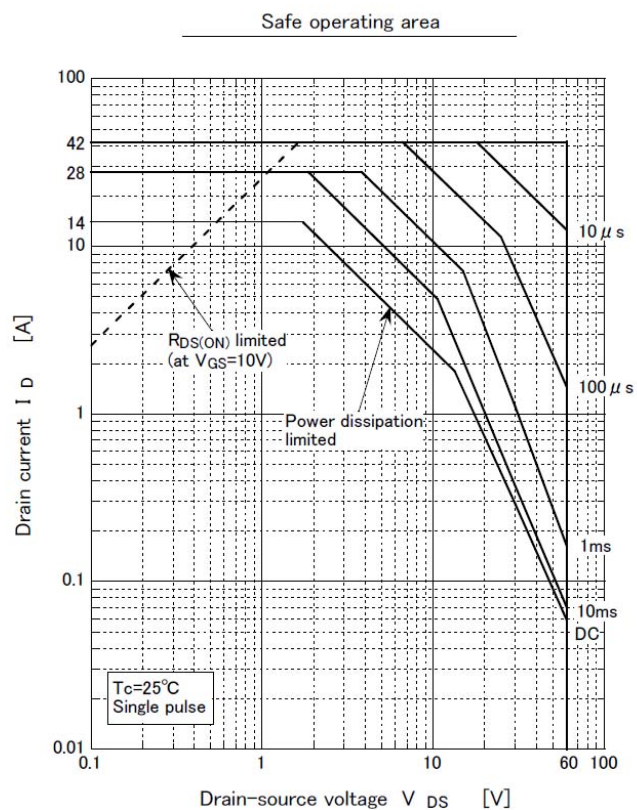
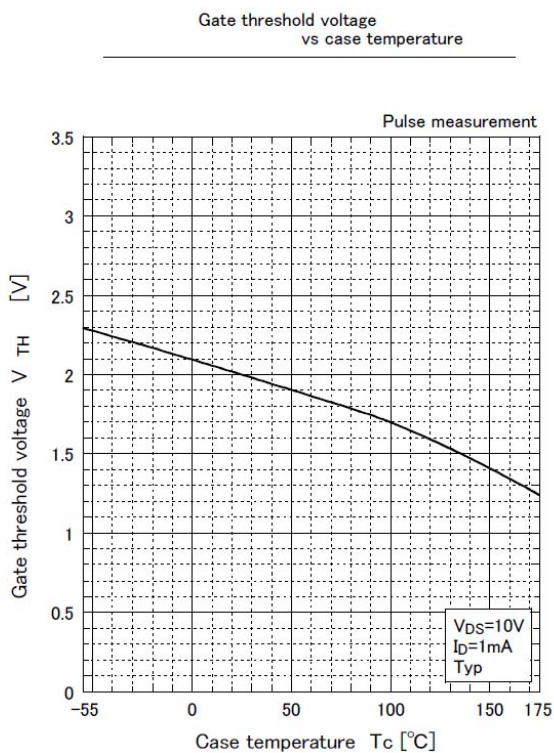


Static drain-source on-state resistance vs drain current



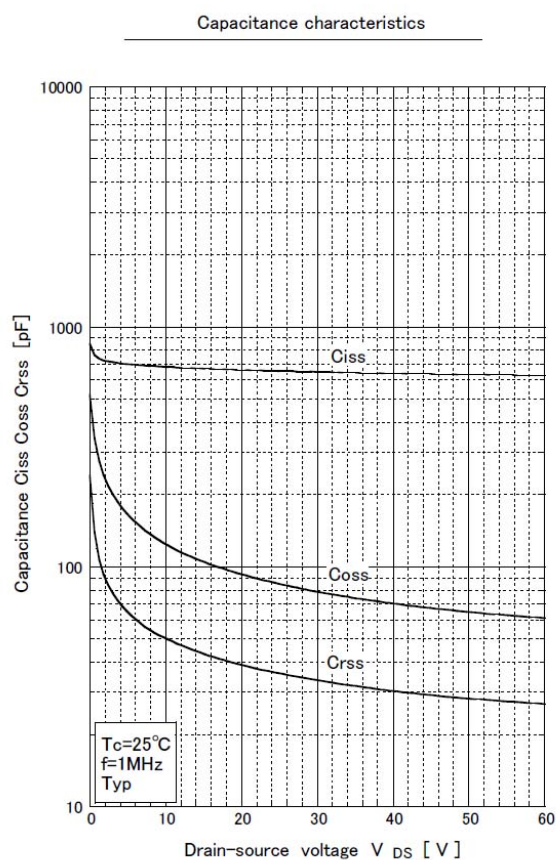
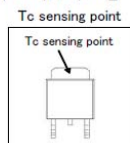
Static drain-source on-state resistance vs case temperature



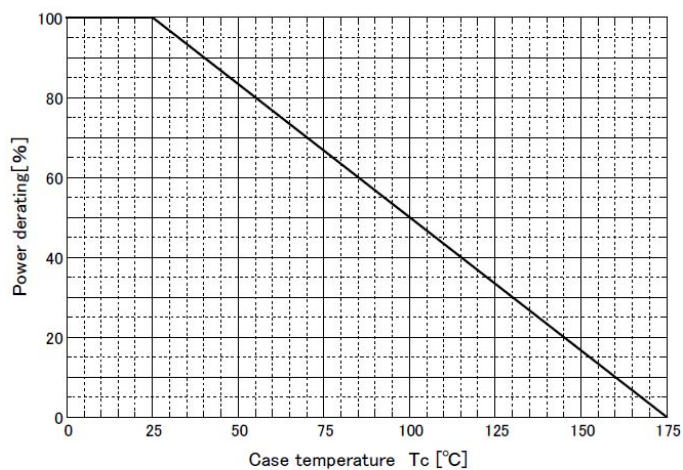


Substrate detail

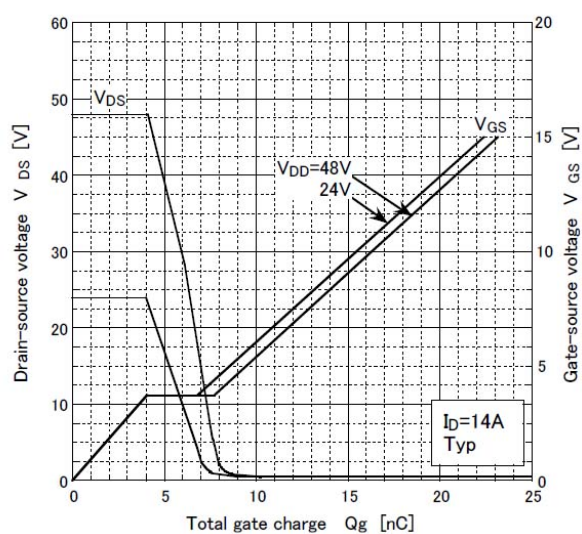
Type	Alumina
Size	1 inch ²
Thickness	0.64mm
Conductor thickness	20 μm
Pattern area	65mm ²



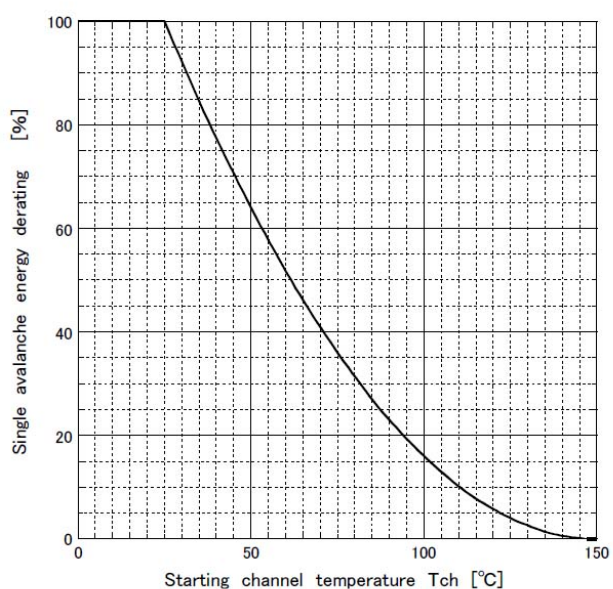
Power derating - case temperature



Gate charge characteristics

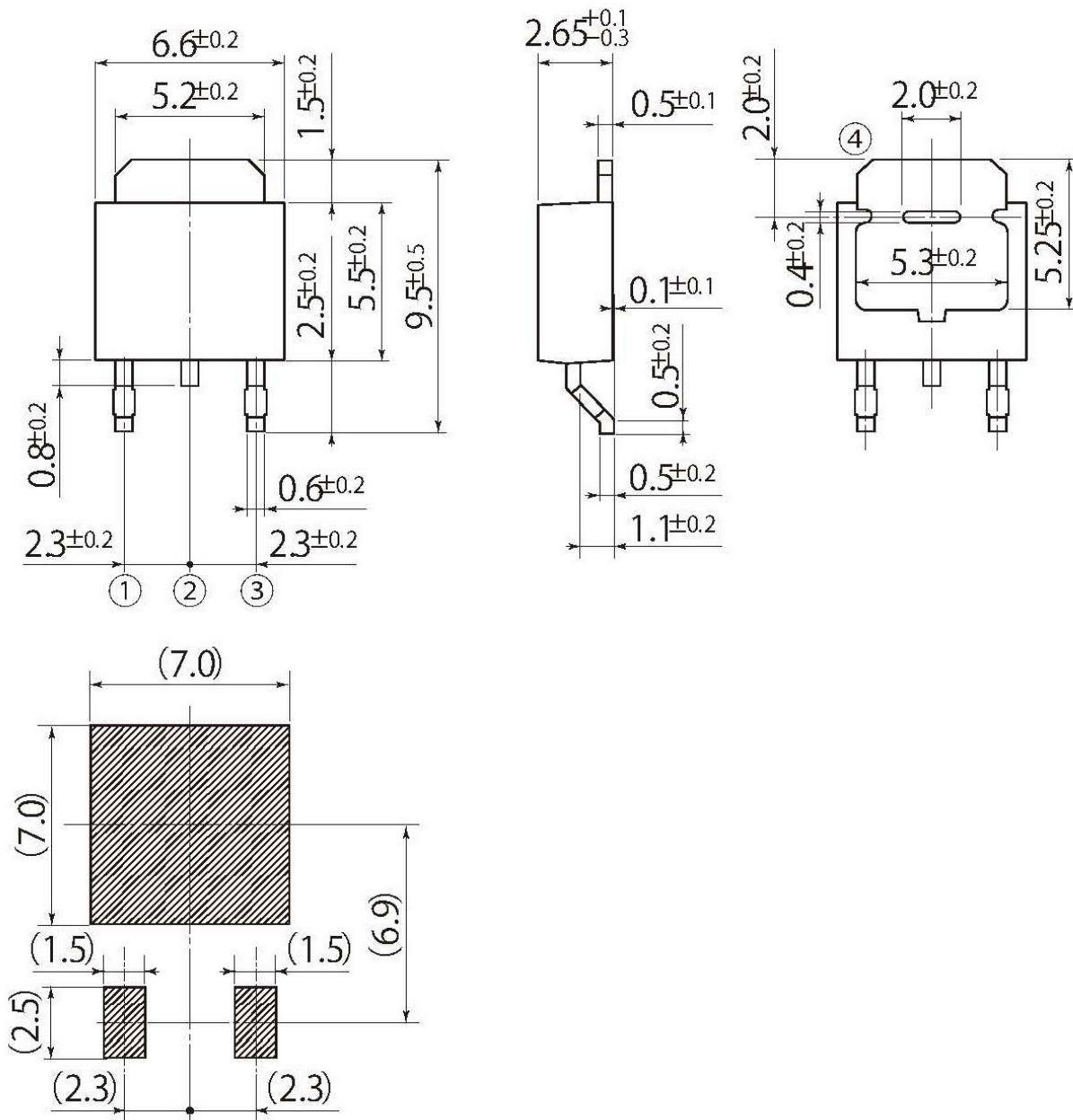


Single avalanche energy derating
vs channel temperature



G3

JEDEC Code	TO-252AB similar
JEITA Code	SC-63
House Name	FE



Referential Soldering Pad

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

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