

# P80FH5ENK

Power MOSFETs  
50V, 80A, N-channel

## Feature

- N-channel
- SMD
- Low Ron
- 10V Gate Drive
- Low Capacitance
- Available for automotive use
- Pb free terminal
- RoHS:Yes

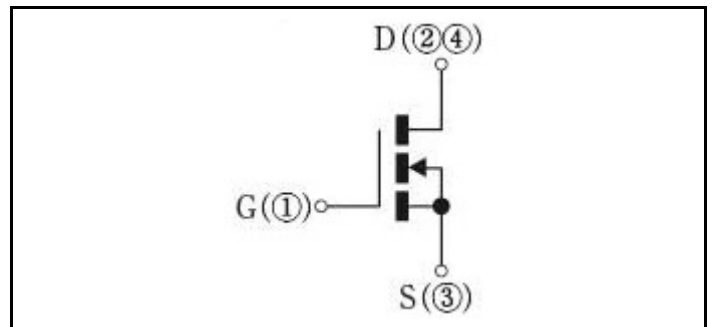
## OUTLINE

Package (House Name): FH

Package (JEDEC Code): TO-263AB-1



## 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>		50	V
Gate-source voltage	V <sub>GSS</sub>		±20	V
Continuous drain current(DC)	I <sub>D</sub>		80	A
Continuous drain current(Peak)	I <sub>DP</sub>	Pulse width 10µs, duty=1/100	320	A
Total power dissipation	P <sub>T</sub>		128	W
Single avalanche current	I <sub>AS</sub>	Starting T <sub>ch</sub> =25°C T <sub>ch</sub> ≤150°C	63	A
Single avalanche energy	E <sub>AS</sub>	Starting T <sub>ch</sub> =25°C T <sub>ch</sub> ≤150°C	418	mJ

\* :See the original Specifications

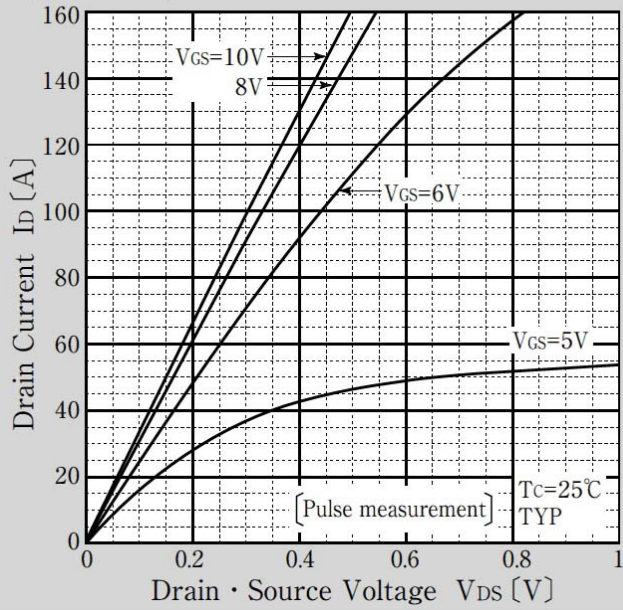
**Electrical Characteristics** (unless otherwise specified : Tc=25°C)

Item	Symbol	Conditions	Ratings			Unit
			MIN	TYP	MAX	
Drain-Source breakdown voltage	$V_{(BR)DSS}$	ID=1mA, VGS=0V	50			V
Zero gate voltage drain current	$I_{DSS}$	VDS=50V, VGS=0V			1	$\mu$ A
Gate-source leakage current	$I_{GSS}$	VGS= $\pm$ 20V, VDS=0V			$\pm$ 0.1	$\mu$ A
Forward transconductance	$g_{fs}$	ID=40A, VDS=10V	15	30		S
Static drain-source on-state resistance	$R_{DS(ON)}$	ID=40A, VGS=10V		0.003	0.0038	$\Omega$
Gate threshold voltage	$V_{th}$	ID=1mA, VDS=10V	2	3	4	V
Source-drain diode forward voltage	$V_{SD}$	IS=80A, VGS=0V			1.5	V
Thermal resistance	$R_{th(j-c)}$	Junction to case			0.97	$^{\circ}$ C/W
Total gate charge	$Q_g$	VDD=40V, VGS=10V, ID=80A		70		nC
Gate to source charge	$Q_{gs}$	VDD=40V, VGS=10V, ID=80A		20		nC
Gate to drain charge	$Q_{gd}$	VDD=40V, VGS=10V, ID=80A		28		nC
Input capacitance	$C_{iss}$	VDS=25V, VGS=0V, f=1MHz		4000		pF
Reverse transfer capacitance	$C_{rss}$	VDS=25V, VGS=0V, f=1MHz		320		pF
Output capacitance	$C_{oss}$	VDS=25V, VGS=0V, f=1MHz		650		pF
Turn-on delay time	$t_{d(on)}$	ID=40A, RL=0.63 $\Omega$ , VDD=25V, Rg=0 $\Omega$ , VGS(+)=10V, VGS(-)=0V		13		ns
Rise time	$t_r$	ID=40A, RL=0.63 $\Omega$ , VDD=25V, Rg=0 $\Omega$ , VGS(+)=10V, VGS(-)=0V		27		ns
Turn-off delay time	$t_{d(off)}$	ID=40A, RL=0.63 $\Omega$ , VDD=25V, Rg=0 $\Omega$ , VGS(+)=10V, VGS(-)=0V		23		ns
Fall time	$t_f$	ID=40A, RL=0.63 $\Omega$ , VDD=25V, Rg=0 $\Omega$ , VGS(+)=10V, VGS(-)=0V		5		ns
Diode reverse recovery time	$t_{rr}$	IF=80A, VGS=0V, di/dt=100A/ $\mu$ s		47		ns
Diode reverse recovery charge	$Q_{rr}$	IF=80A, VGS=0V, di/dt=100A/ $\mu$ s		74		nC

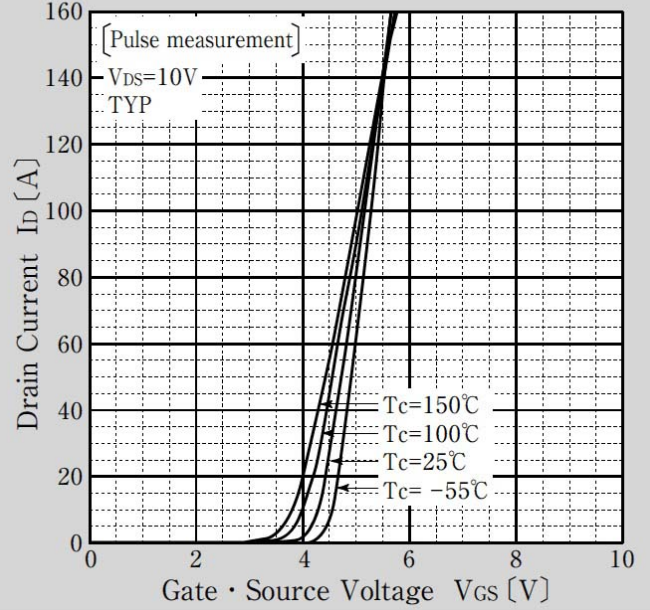
※ : See the original Specifications

# CHARACTERISTIC DIAGRAMS

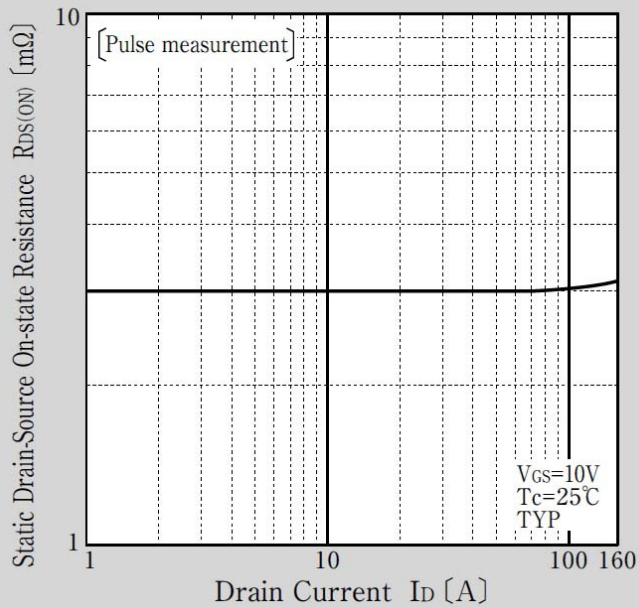
### Typical Output Characteristics



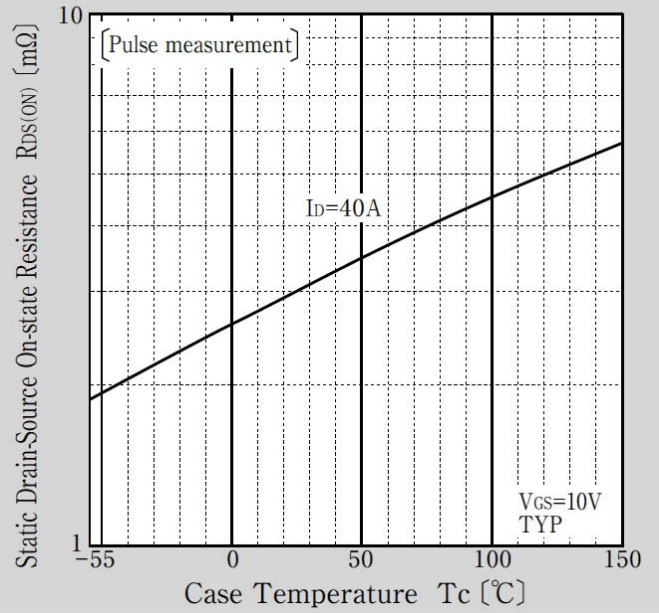
### Transfer Characteristics



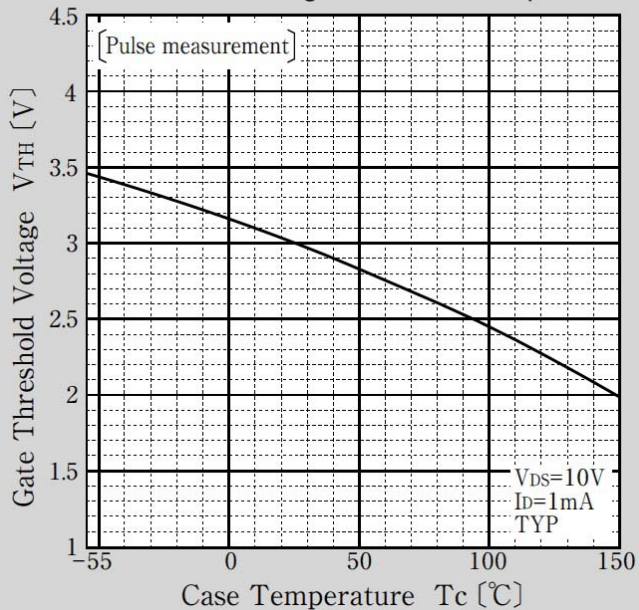
### Static Drain-Source On-state Resistance vs Drain Current



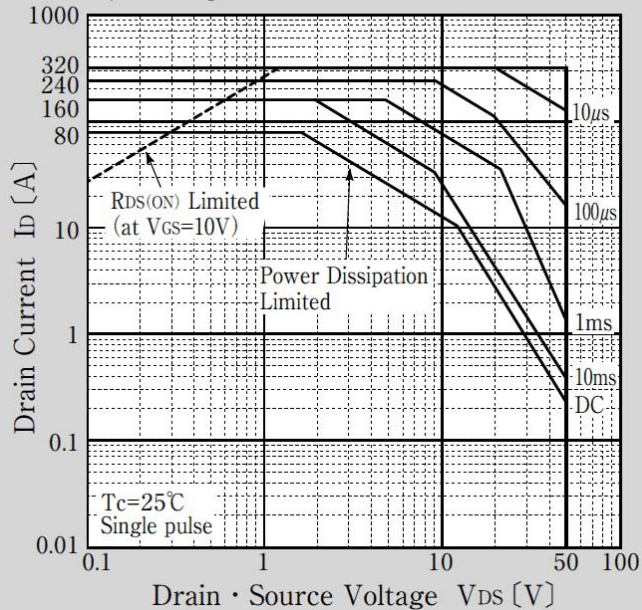
### Static Drain-Source On-state Resistance vs Case Temperature



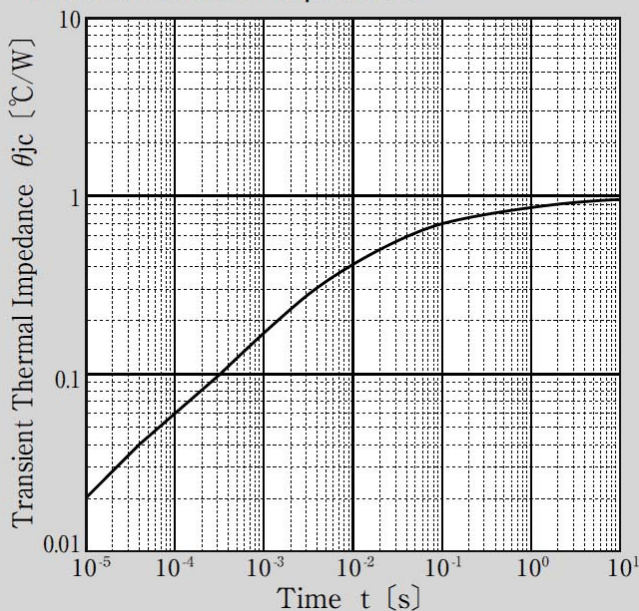
### Gate Threshold Voltage vs Case Temperature



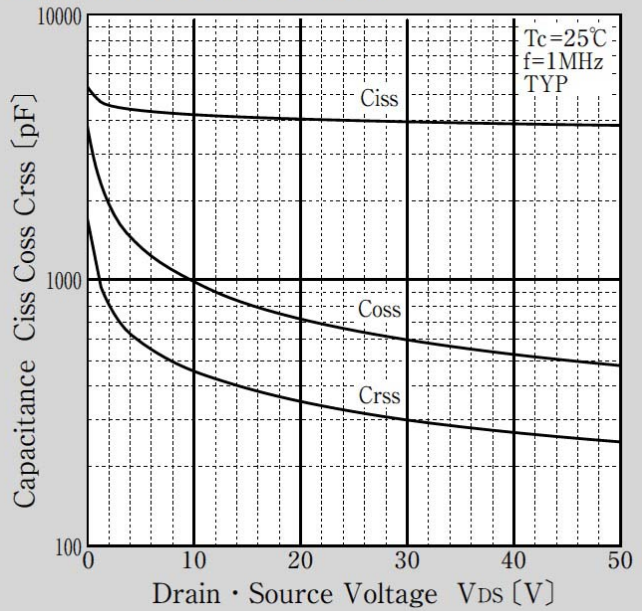
### Safe Operating Area



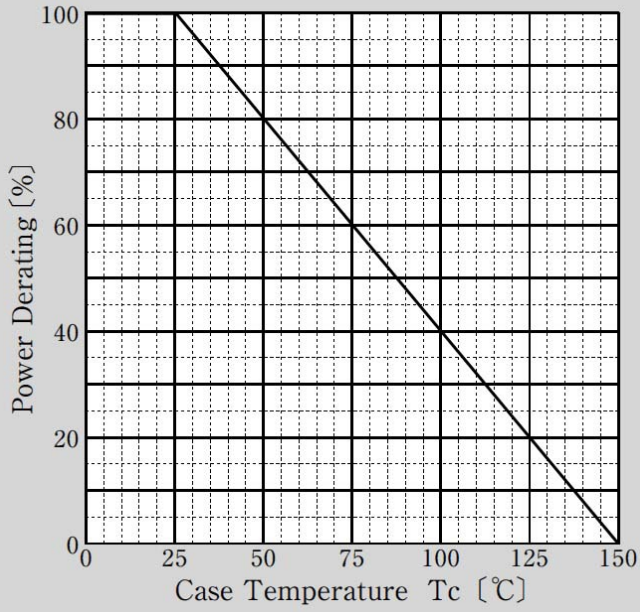
### Transient Thermal Impedance



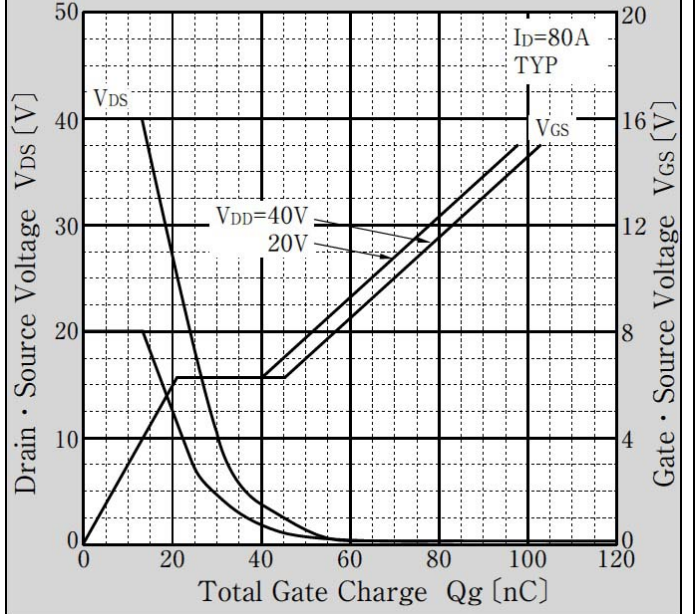
### Capacitance Characteristics



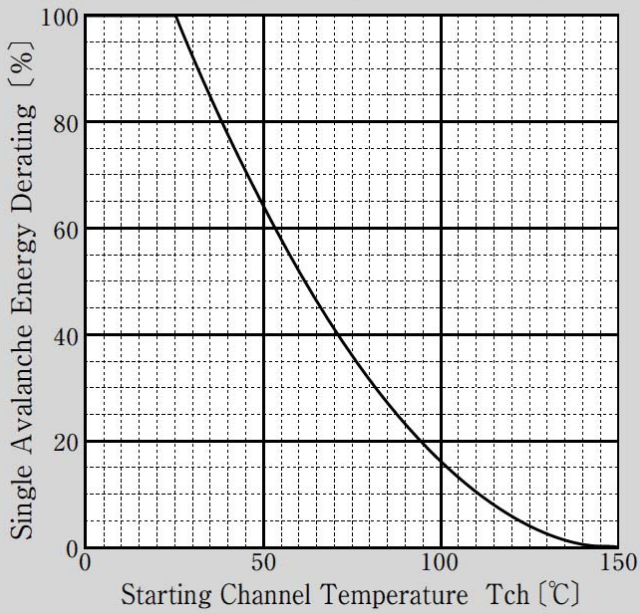
Power Derating - Case Temperature



Gate Charge Characteristics

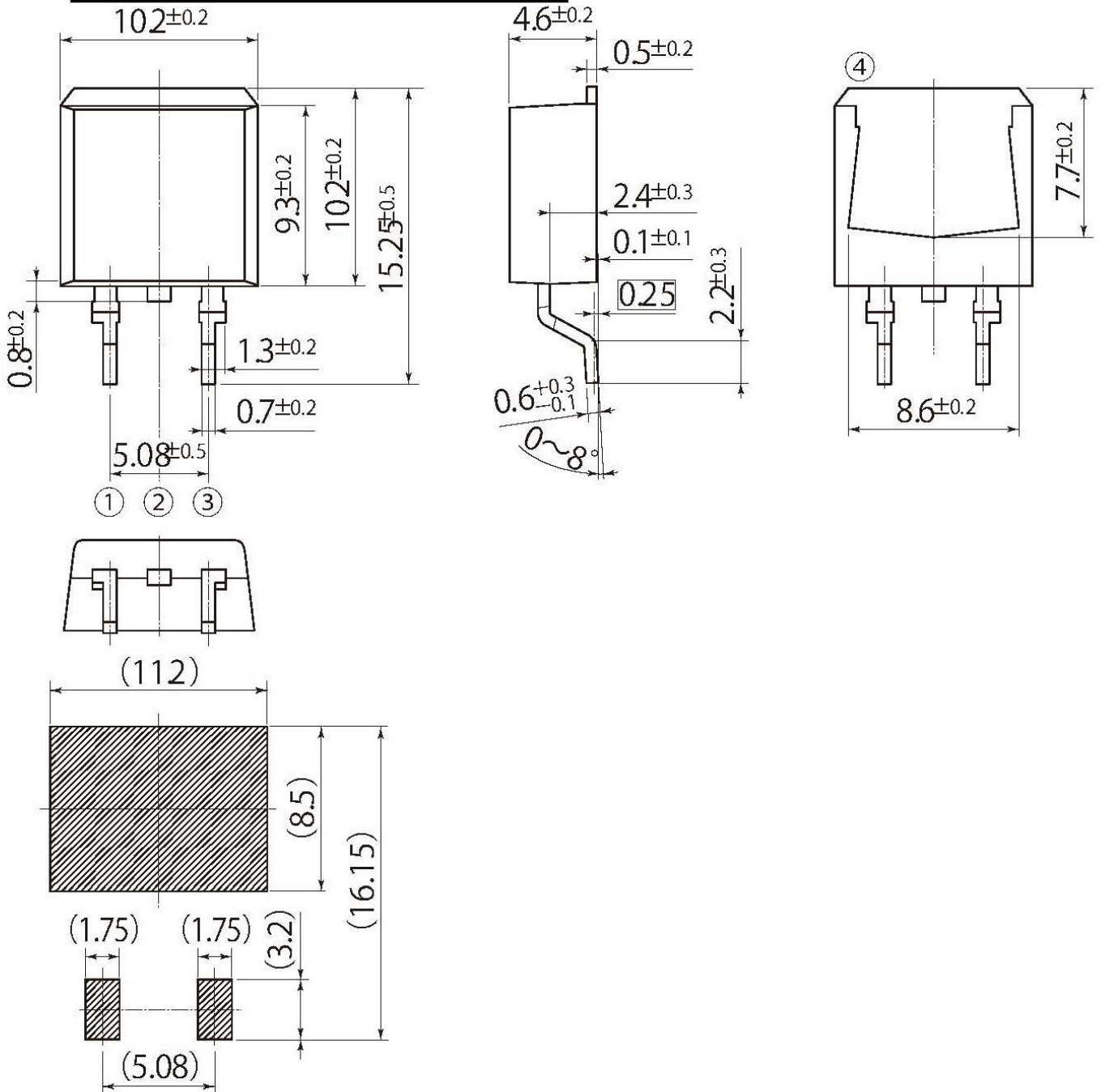


Single Avalanche Energy Derating vs Channel Temperature



H3

JEDEC Code	TO-263AB-1
JEITA Code	-
House Name	FH



Referential Soldering Pad

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

## Notes

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