SPECIFICATION

Device Name : Intelligent Power MOSFET

Type Name : F5019-S

Spec. No. : MS5F4286

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Fuji Electric Co., Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED
DRAWN	March-19-1998	S.Kiuchi	
CHECKED	March-19-1998	S.Furuhata	

Fuji Electric Co.,Ltd.

DWG.NO. MS5F4286 1/13

Revised Records

Date	Classi-fication	Ind.	Content	Applied date	Drawn	Checked	Approved
March-19-1998	enactment	——	————	Issued date	——		

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1. Scope
This specifies Fuji Intelligent Power MOSFET F 5 0 1 9 − S

2. Construction
Self-Isolation Structure
Output Part; N-channel enhancement mode power MOSFET

3. Application
For switching

4. Outview
T pack S-type. (See to 6/13 page)

5. Absolute maximum ratings (at Tj=25℃, unless otherwise specified.)

Description	Symbol	Characteristics	Unit	Conditions
Drain-source voltage	V_{DSS}	4 0	V	D C
Gate-source voltage	V_{GSS}	D C − 0. 3 ～ 7. 0	V	D C
Continuous drain current	I_D	1 2	A	T c = 2 5℃
Maximum power dissipation	P_D	3 0	W	T c = 2 5℃
Operating junction temperature	T_J	1 5 0	℃	———
Storage temperature range	T_{stg}	− 5 5 ～ 1 5 0	℃	———

6. Electrical characteristics (at Tj=25 ℃, unless otherwise specified.)

Description	Symbol	Conditions	Characteristics Min.	Typ.	Max.	Unit
Drain-source clamp voltage	V_{DSS}	I_D = 1 mA, V_{GS} = 0 V	4 0		6 0	V
Gate threshold voltage	$V_{GS(th)}$	I_D = 1 0 mA, V_{DS} = 1 3 V	1. 0		2. 8	V
Operation gate voltage	$V_{GS(P)}$		3. 5		7. 0	V
Zero gate voltage drain current	I_{DSS}	V_{DS} = 3 0 V, V_{GS} = 0 V			1. 0	mA
Gate-source leakage current	$I_{GS(n)}$	* V_{GS} = 5 V			5 0 0	μA
	$I_{GS(un)}$	** V_{GS} = 5 V			8 0 0	μA
Drain-source on-state resistance	$R_{DS(on)}$	I_D = 5 A, V_{GS} = 5 V			1 4 0	mΩ
Forward on voltage	V_{SD}	I_F = 2 4 A			2. 0	V

* Under normal operation ** Under self protection

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Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Turn-on time	t_{on}	V_{DS} = 13 V R_L = 2.6 Ω V_{GS} = 5 V			200	μS
Turn-off time	t_{off}				200	μS
Over-temperature protection	T_{trip}	V_{GS} = 5 V	150		210	℃
Short circuit protection	I_{oc}	V_{GS} = 5 V	12		32	A
Single pulse inductive load switch-off energy dissipation	E_{CL}	I_D = 8 A T_J = 150℃	100			mj

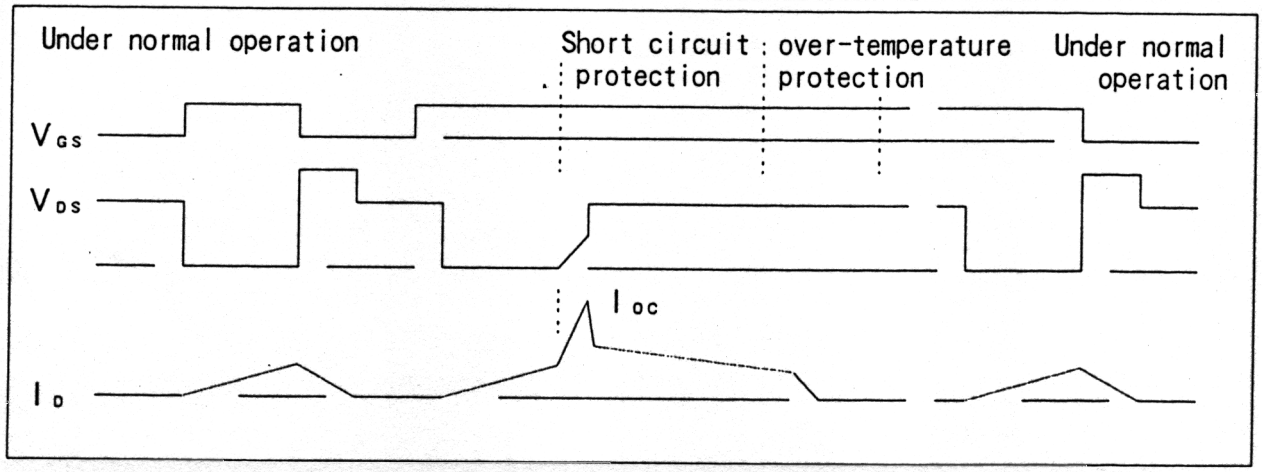
7. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$Rth_{(j-c)}$	Junction-case			4.2	℃/W
	$Rth_{(j-a)}$	Junction-ambient			100	℃/W

8. Electrostatic discharge

Description	Conditions	Characteristics			Unit
		Min.	Typ.	Max.	
Drain-source	150pF, 150Ω	±15			kV
Gate-source		±0.5			kV

9. Timing chart



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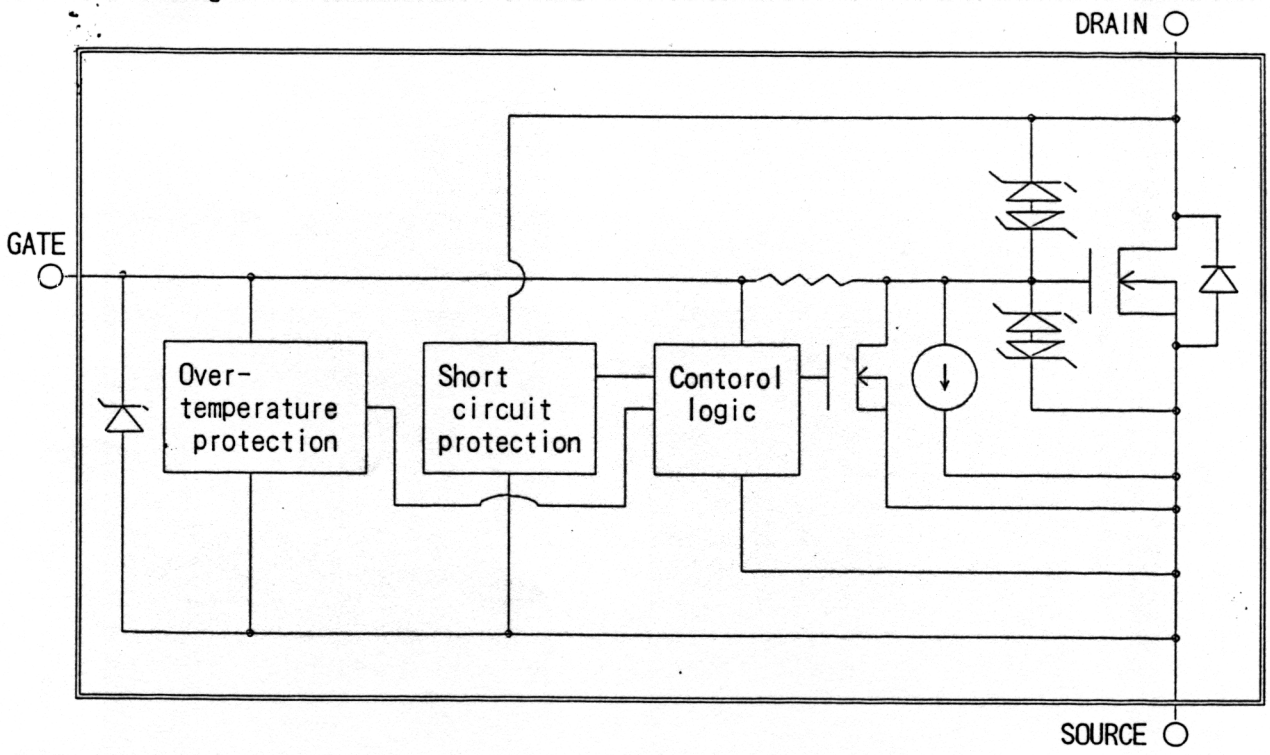
1 0. Block diagram



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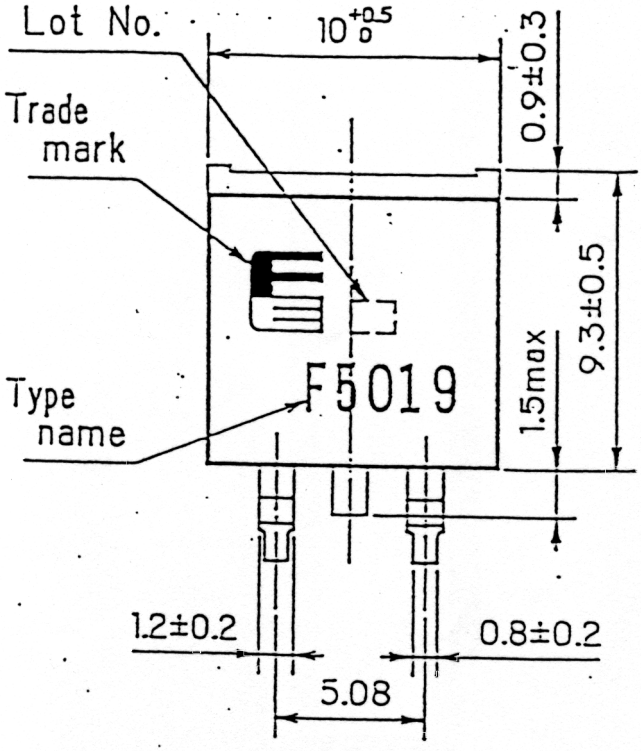
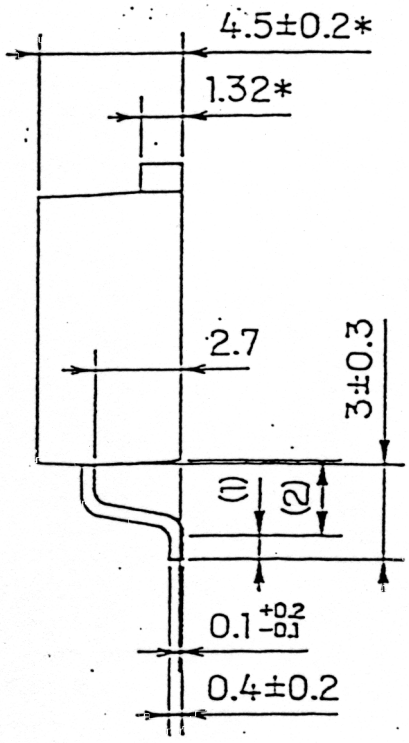
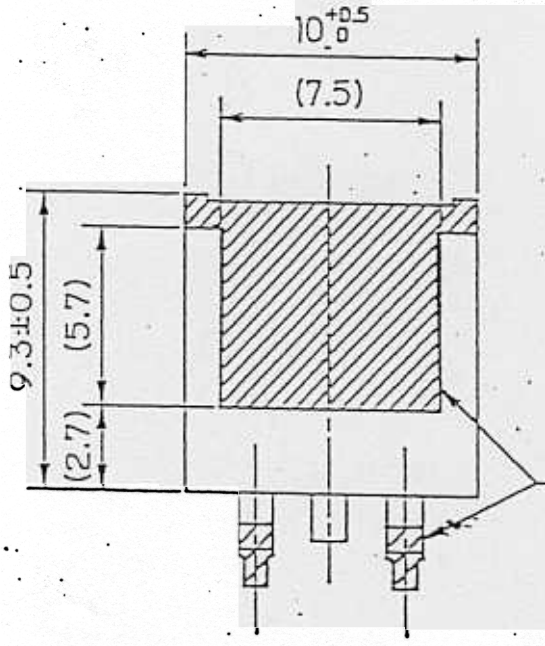
FUJI POWER MOS FET

TYPE : F5019





BOTTOM VIEW



CONNECTION

① GATE
② DRAIN
③ SOURCE

Notes

1. ( ) : REFERENCE DIMENSIONS.
2. * : DO NOT INCLUDE SOLDER.

DIMENSIONS ARE IN MILLIMETERS.

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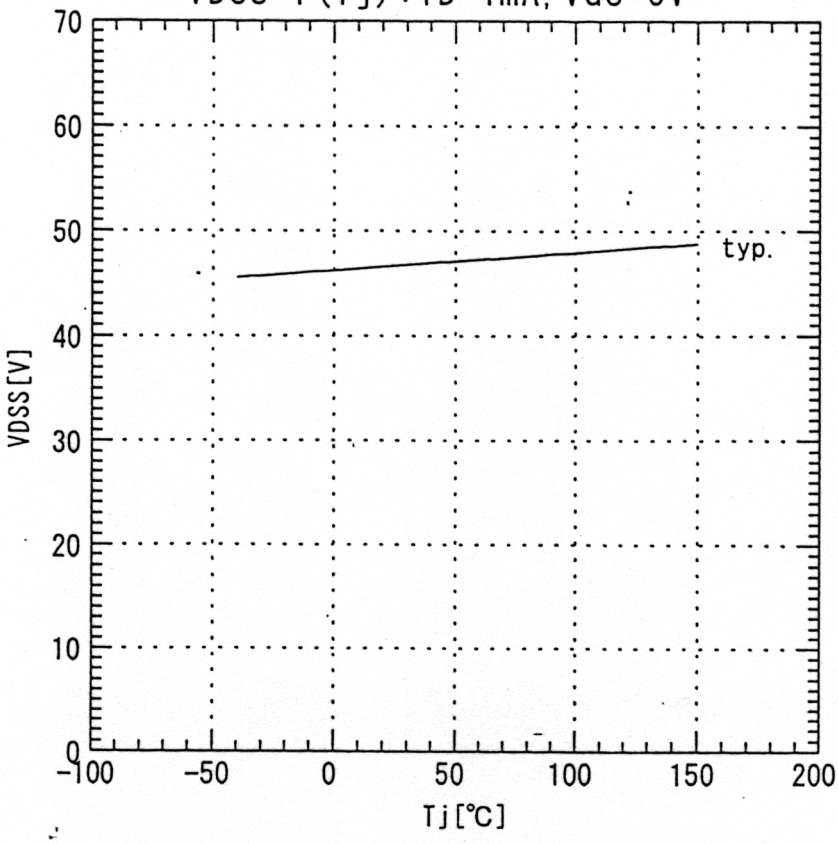
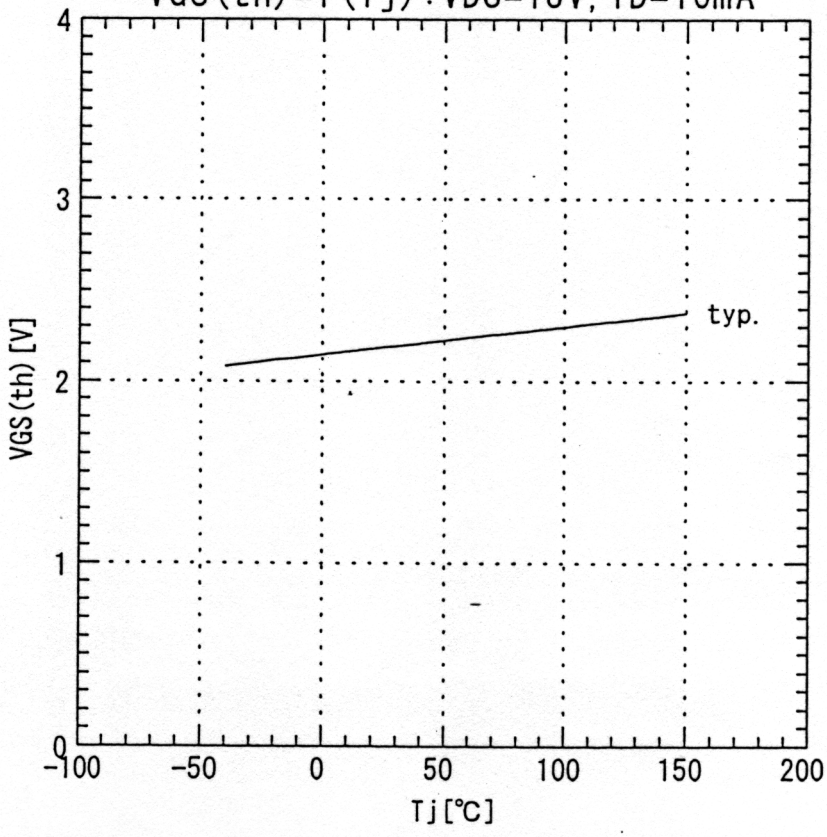
Drain-source clamp voltage
VDSS=f(Tj) : ID=1mA, VGS=0V



Gate threshold voltage
VGS(th)=f(Tj) : VDS=13V, ID=10mA



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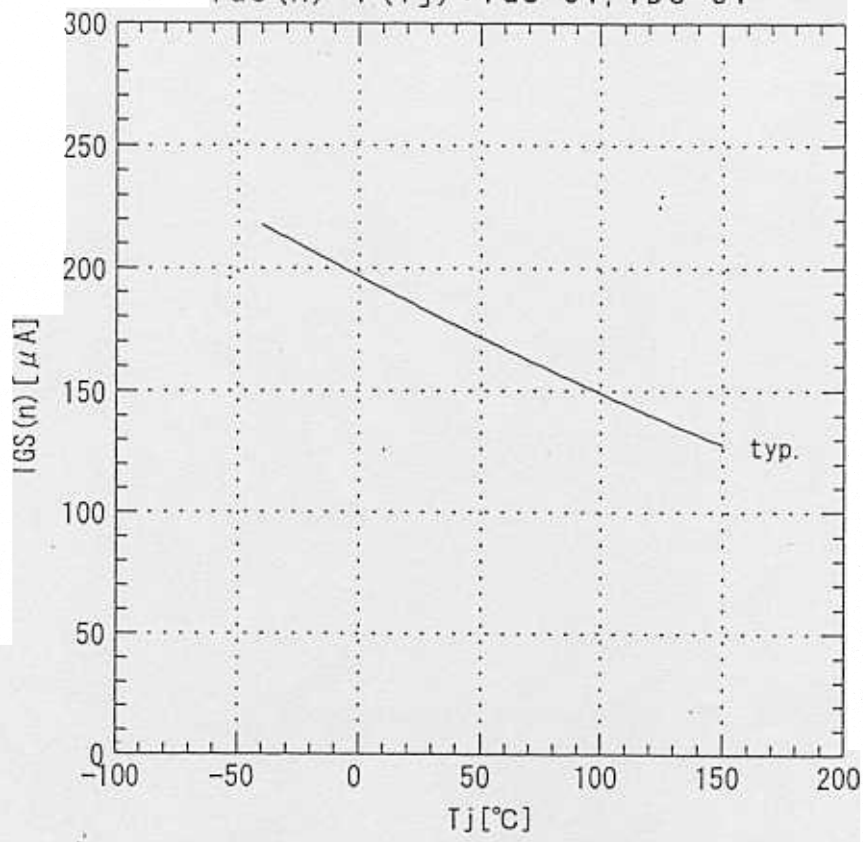
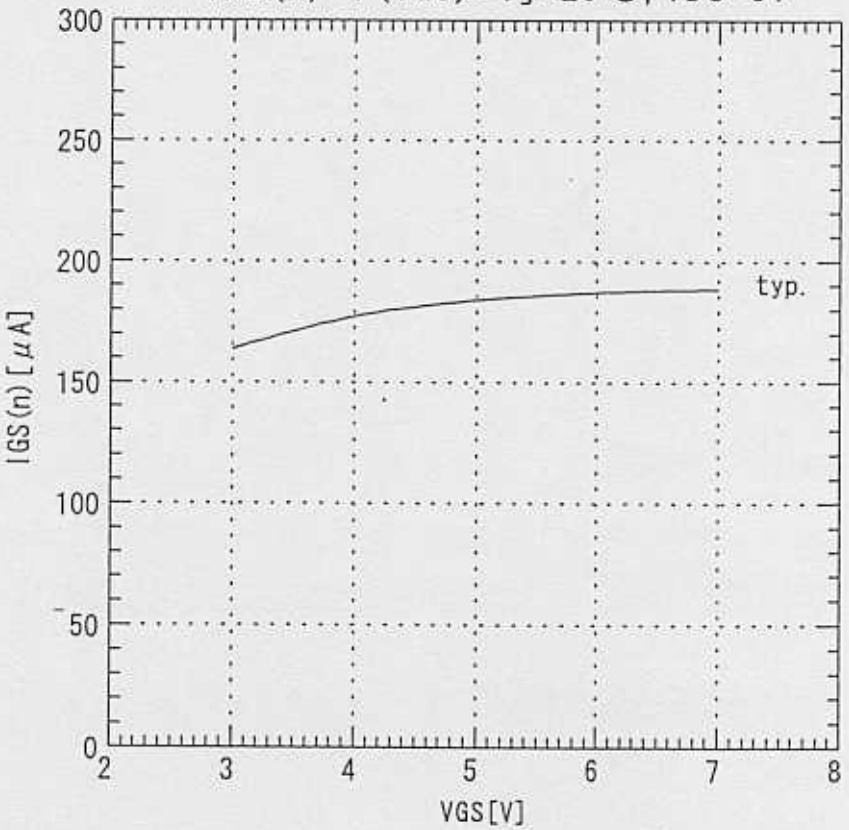
Gate-source leakage current
IGS(n)=f(Tj) : VGS=5V, VDS=0V



Gate-source leakage current
IGS(n)=f(VGS) : Tj=25°C, VDS=0V



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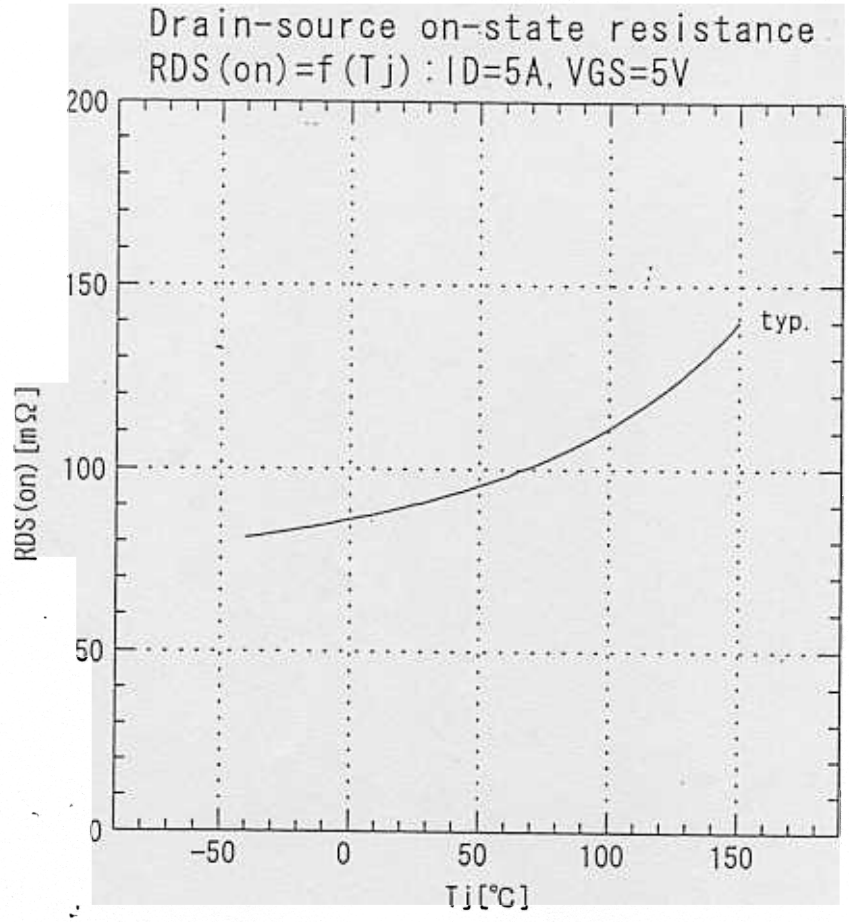

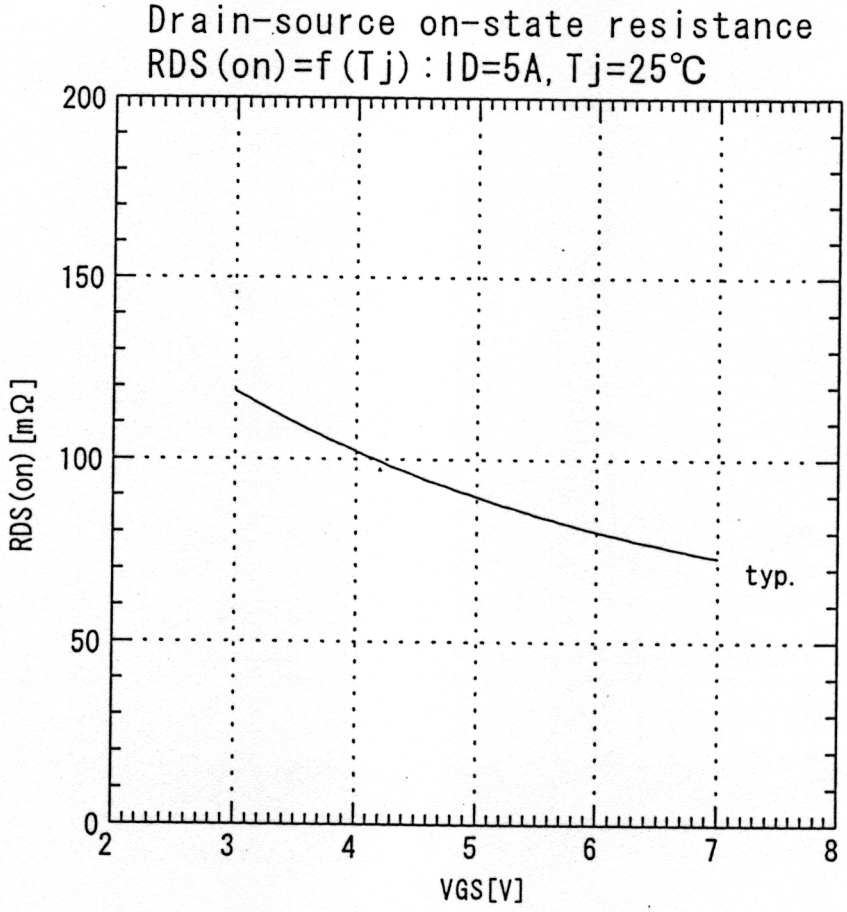

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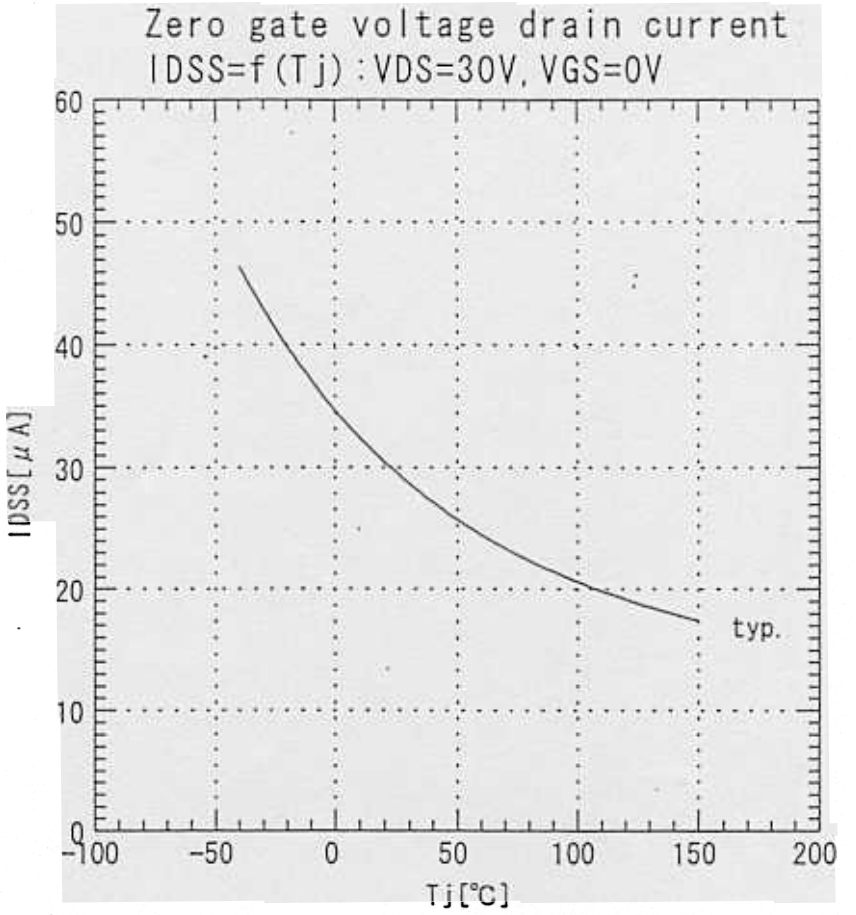

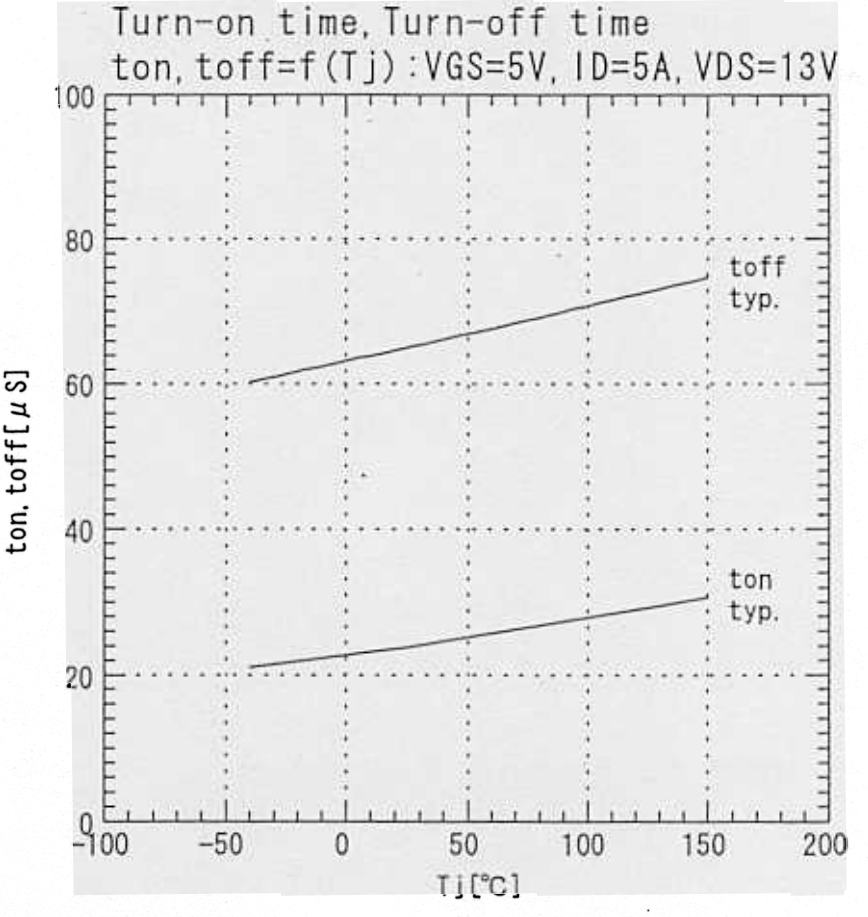

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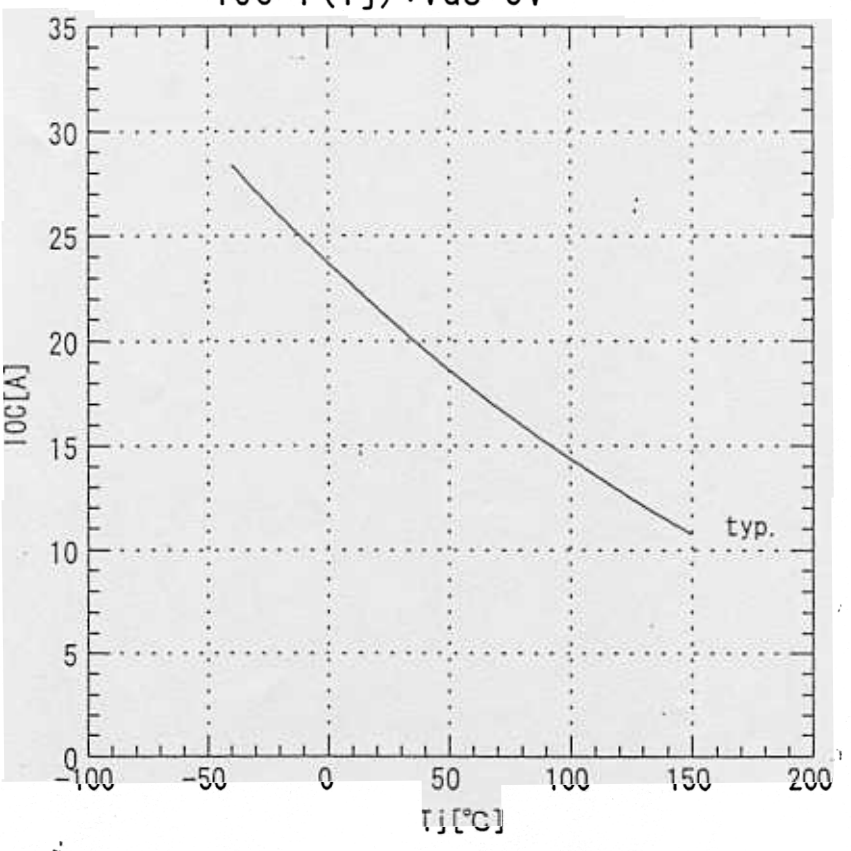
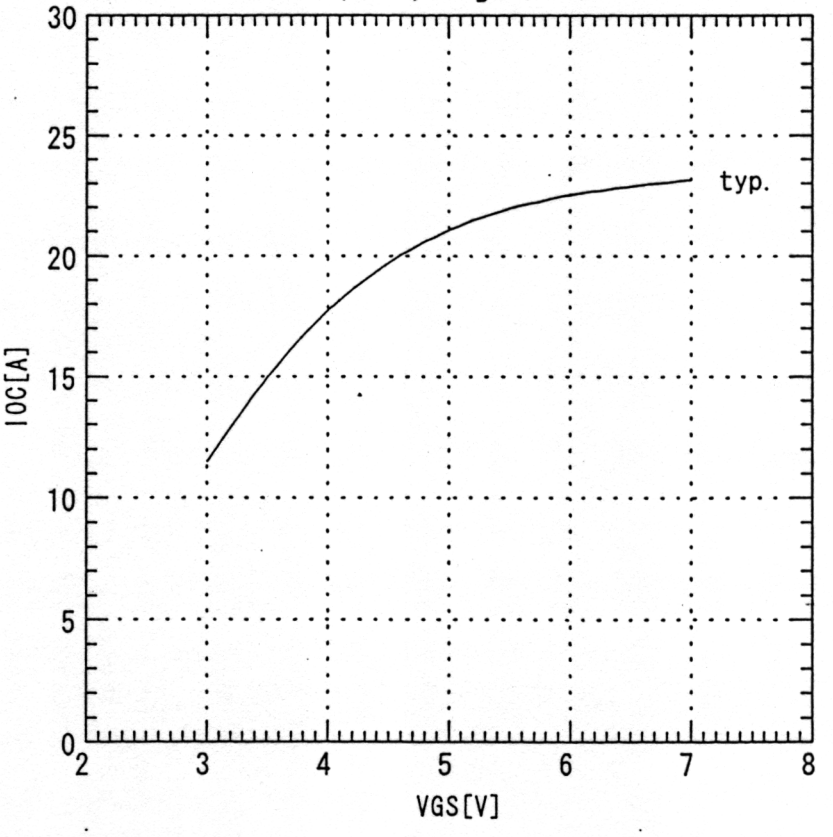
Short circuit detection
IOC=f(Tj) : VGS=5V



Short circuit detection
IOC=f(VGS) : Tj=25°C



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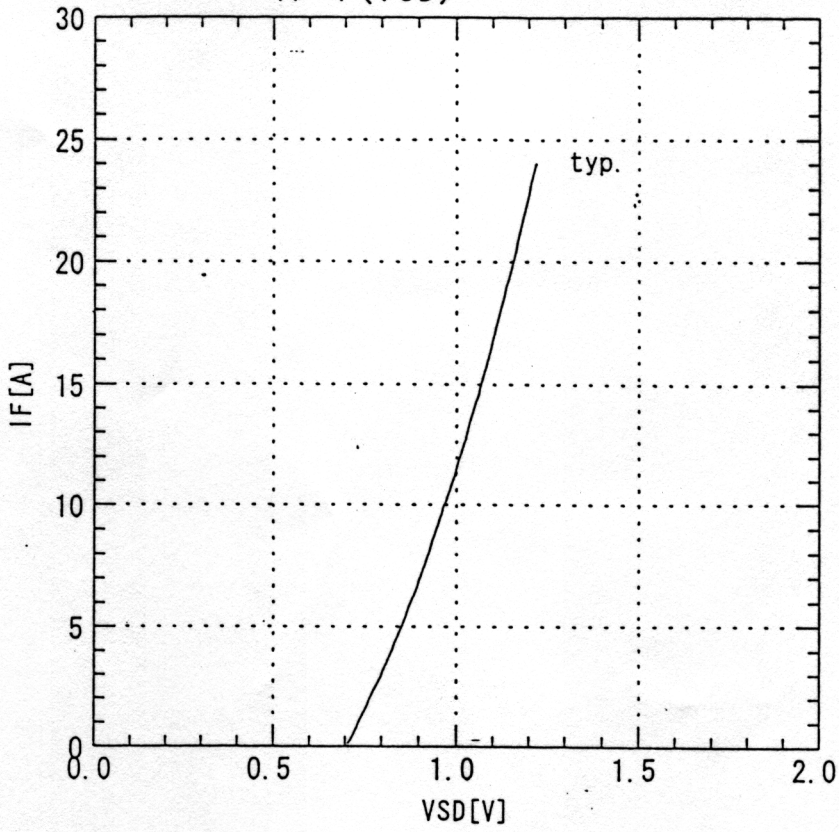
Forward on voltage
IF=f(VSD)



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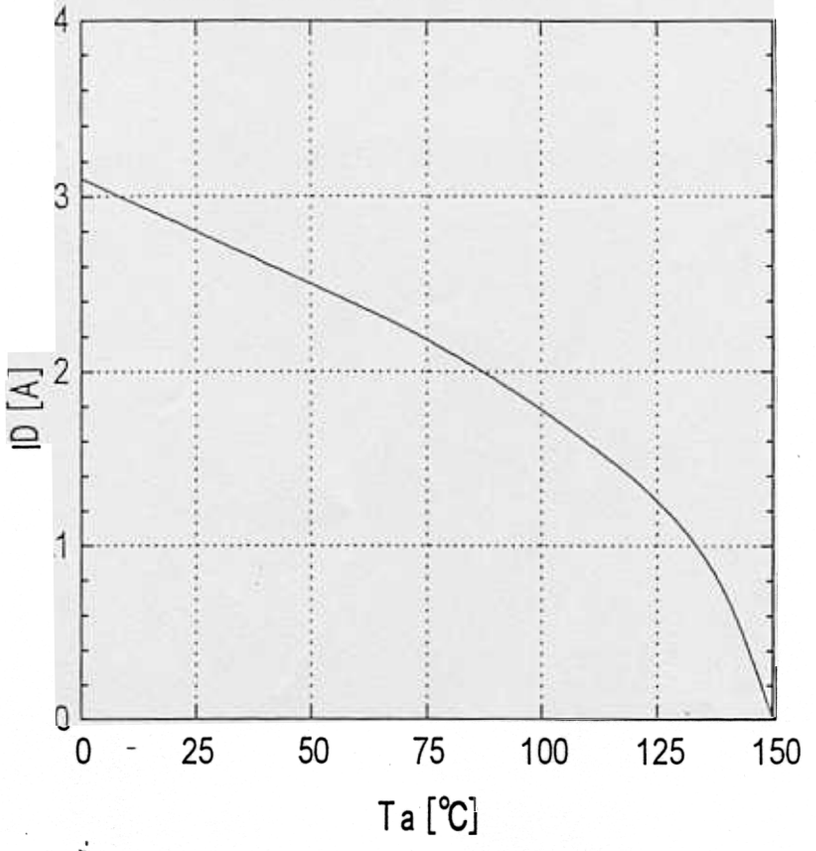
Continuous Drain Current VS Ambient Temperature
ID=f(Ta):Mounting Pad Size(a)=10mm



Mounting Pad Size VS Drain Current Ratio
Drain Current Ratio=f(Maunting Pad Size)