SPECIFICATION

Device Name : Intelligent Power MOSFET

Type Name : F5033

Spec. No. : **MS5F4292**

Fuji Electric Co., Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED
DRAWN	April-2-1998		
CHECKED	April-2-'98		

Fuji Electric Co.,Ltd.

DWG.NO. **MS5F4292** 1/12

H04-004-07

Revised Records

Date	Classi-fication	Ind.	Content	Applied date	Drawn	Checked	Approved
April-1-1998	enactment	—	———	Issued date	———	S.Ipdate	S.Ipdate

1. Scope
This specifies Fuji Intelligent Power MOSFET F 5 0 3 3

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

3. Application
For switching

4. Outview
SOP-8(EIAJ SC-87) Outview See to 5/12 page)

5. Absolute maxiaum 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	A	——
Maximum power dissipation	P_D	1.5	W	*
Operating junction temperature	T_j	1 5 0	℃	——
Storage temperature range	T_{stg}	−5 5 ~ 1 5 0	℃	——

* Surface Mounted on 1000mm²PCB(FR-4)

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

Description	Symbol	Conditions		Characteristics			Unit
				Min.	Typ.	Max.	
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	$V_{GS(op)}$			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
	$I_{GS(un)}$	**				8 0 0	μA
Drain-source on-state resistance	$R_{DS(on)}$	I_D = 0.5 A V_{GS} = 5 V				6 0 0	mΩ

* Under normal operation ** Under self protection

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Turn-on time	t_{on}	V_{DS} = 13 V I_D = 0.5 A V_{GS} = 5 V			50	μS
Turn-off time	t_{off}				50	μS
Over-temperature protection	T_{trip}	V_{GS} = 5 V	150			℃
Short circuit protection	I_{os}	V_{GS} = 5 V	1			A
Single pulse inductive load switch-off energy dissipation	E_{CL}	T_j = 150℃	25			mJ

7. Thermal resistance

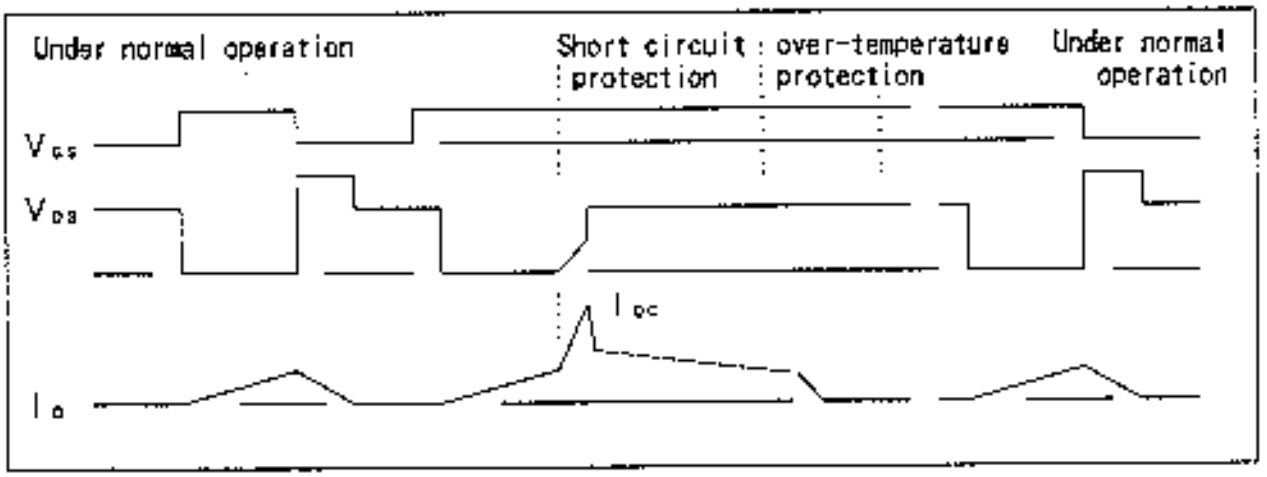
Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$Rth_{(j-a)}$	Junction-asbient *			83	℃/W

* Surface Mounted on 1000mm²PCB(FR-4)

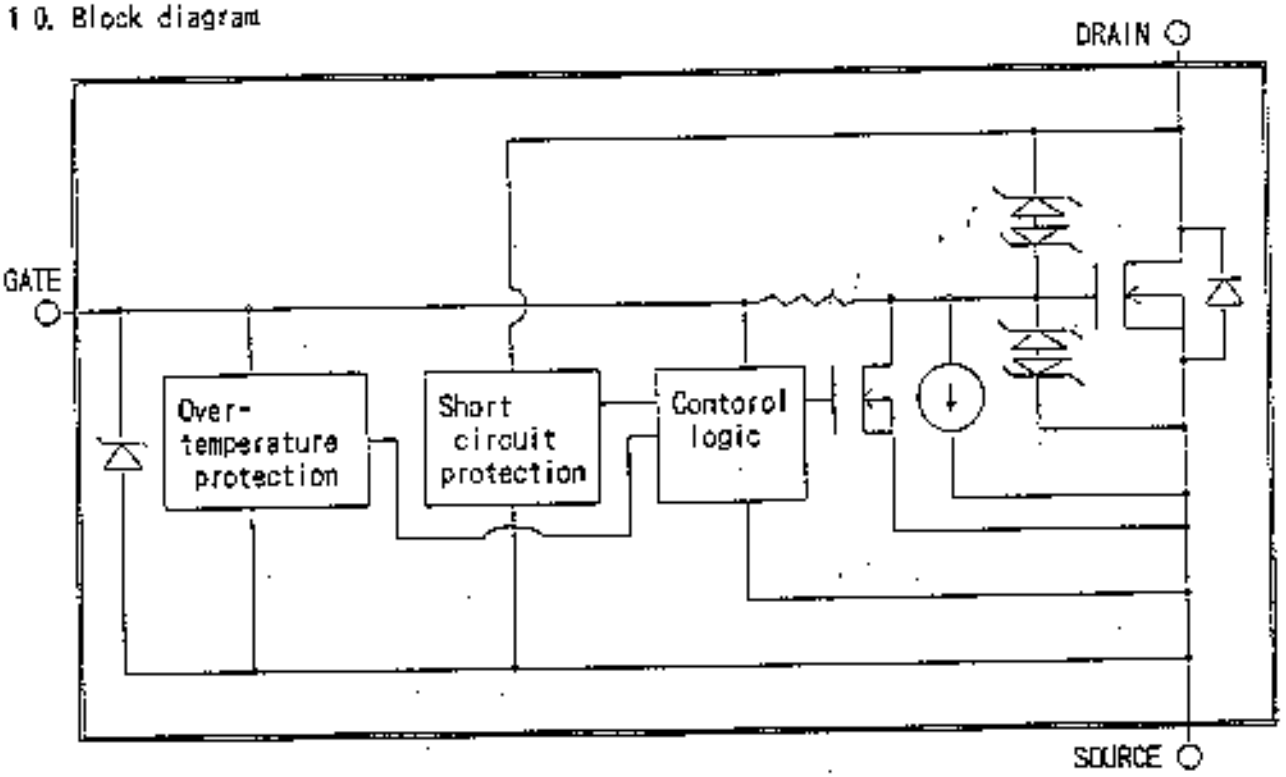
8. Electrostatic discharge

Description	Conditions	Characteristics			Unit
		Min.	Typ.	Max.	
Drain-source	150pF, 15.0Ω	±15			kV
Gate-source		±0.5			kV

9. Timing chart

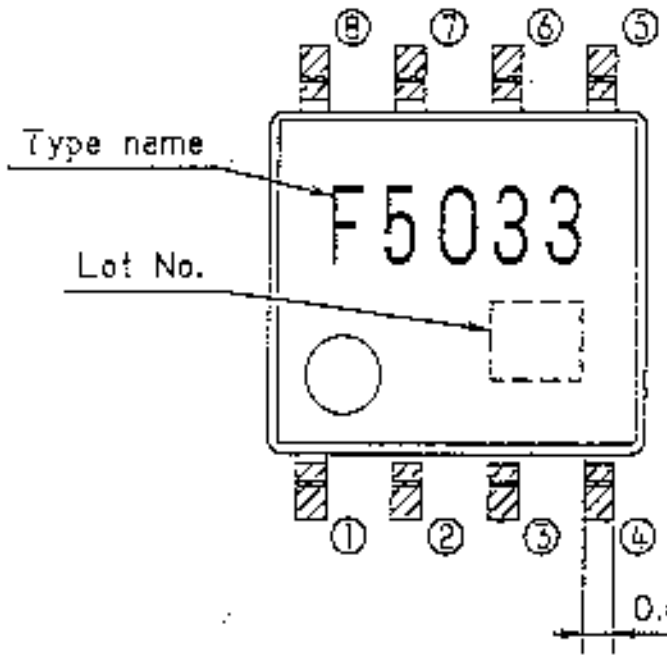


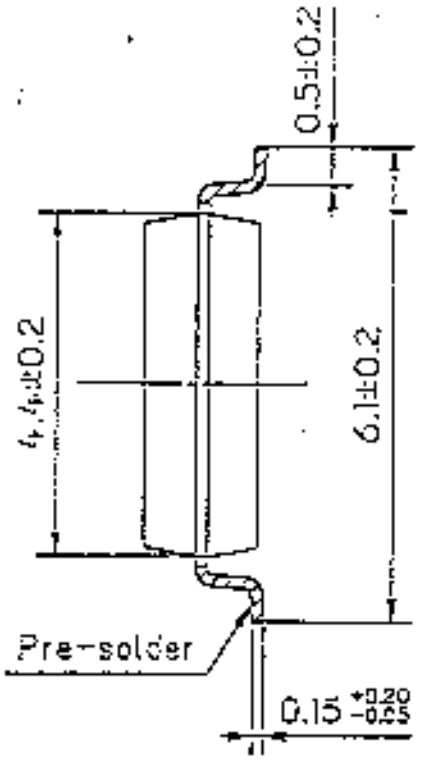
10. Block diagram

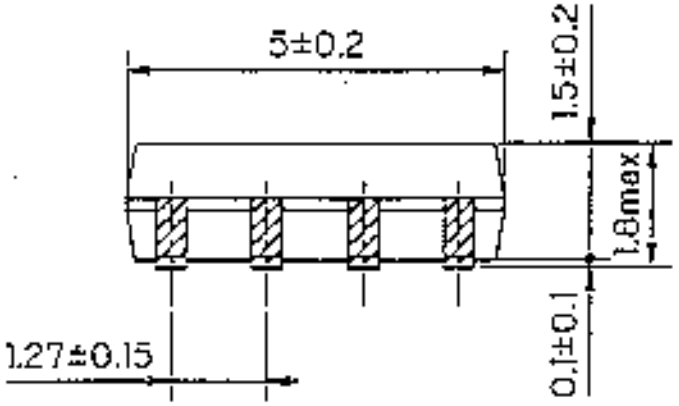


FUJI INTELLIGENT POWER MOS FET

TYPE : F5033





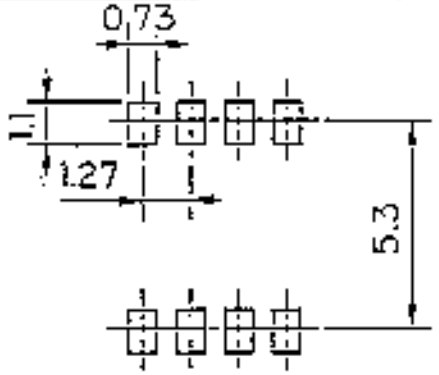


CONNECTION

① SOURCE 1
② GATE 1
③ SOURCE 2
④ GATE 2
⑤ ⑥ DRAIN 2
⑦ ⑧ DRAIN 1

EIAJ : SC-67

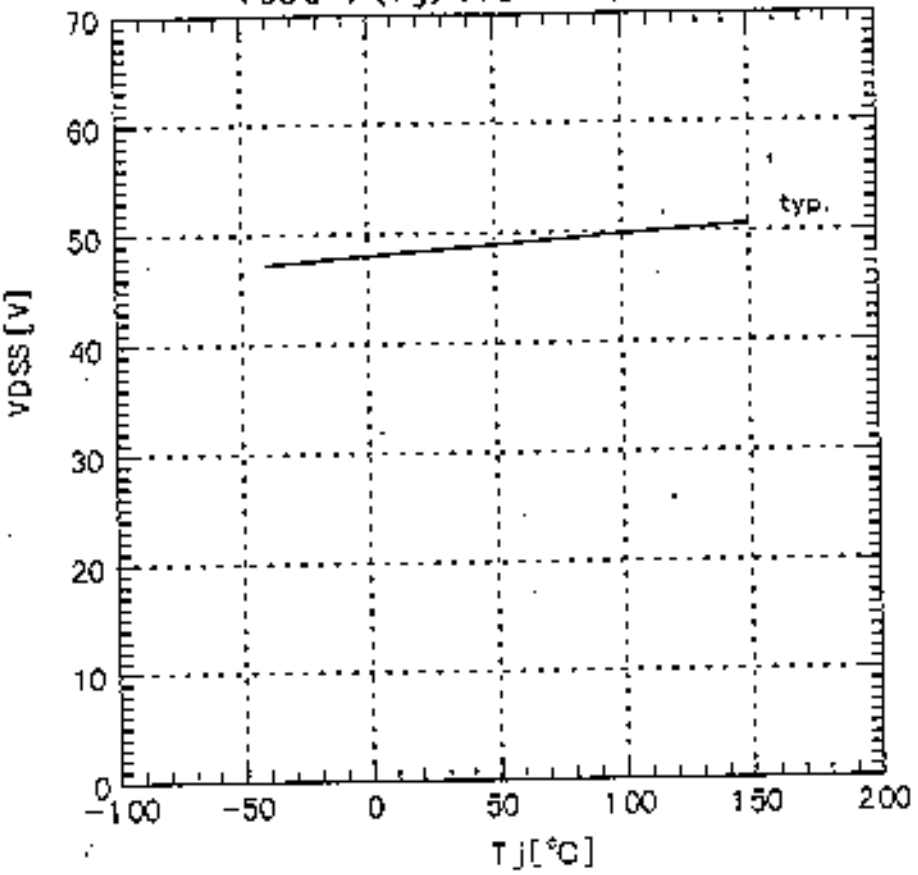
RECOMMENDED PATTERN OF SOLDERING PADS.



DIMENSIONS ARE IN MILLIMETERS.

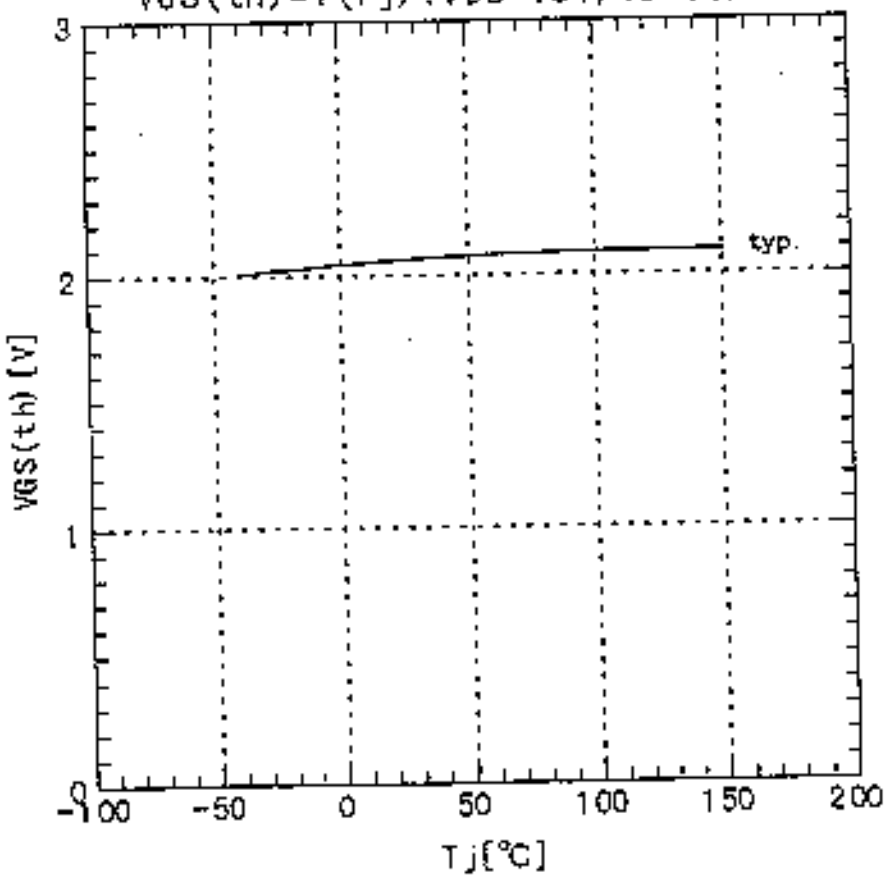
Drain-source clamp voltage

VDSS=f(Tj) : ID=1mA, VGS=0V



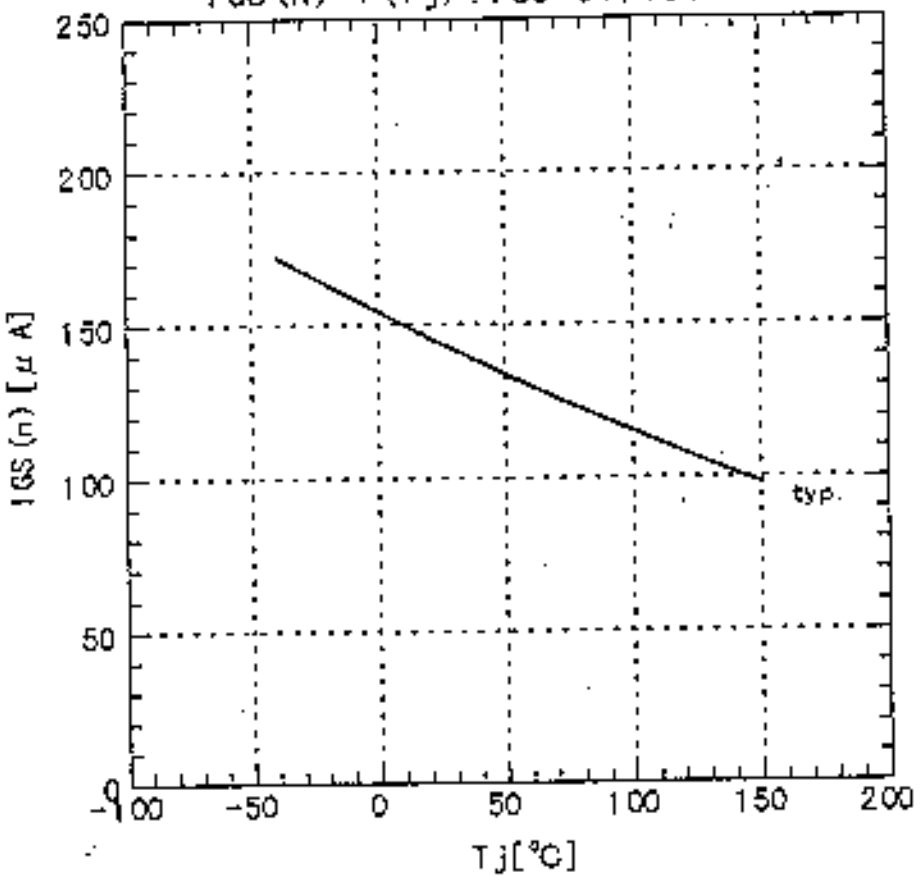
Gate threshold voltage

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



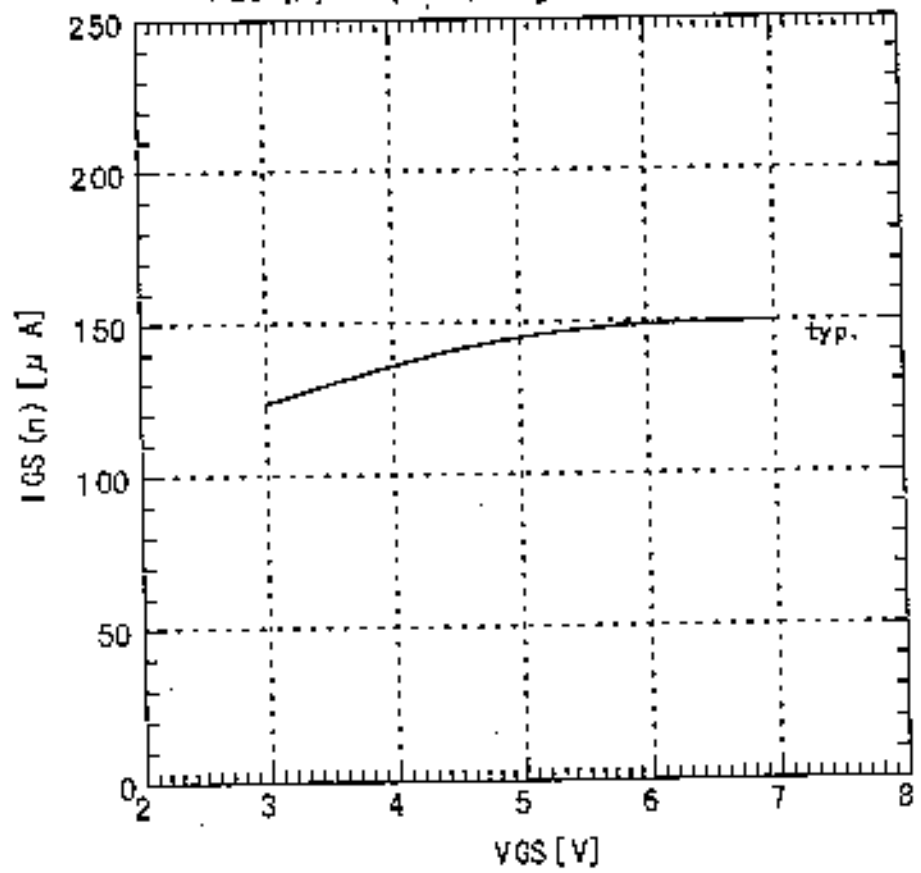
Gate-source leakage current

IGS(n)=f(Tj) :VGS=5V, VDS=0V

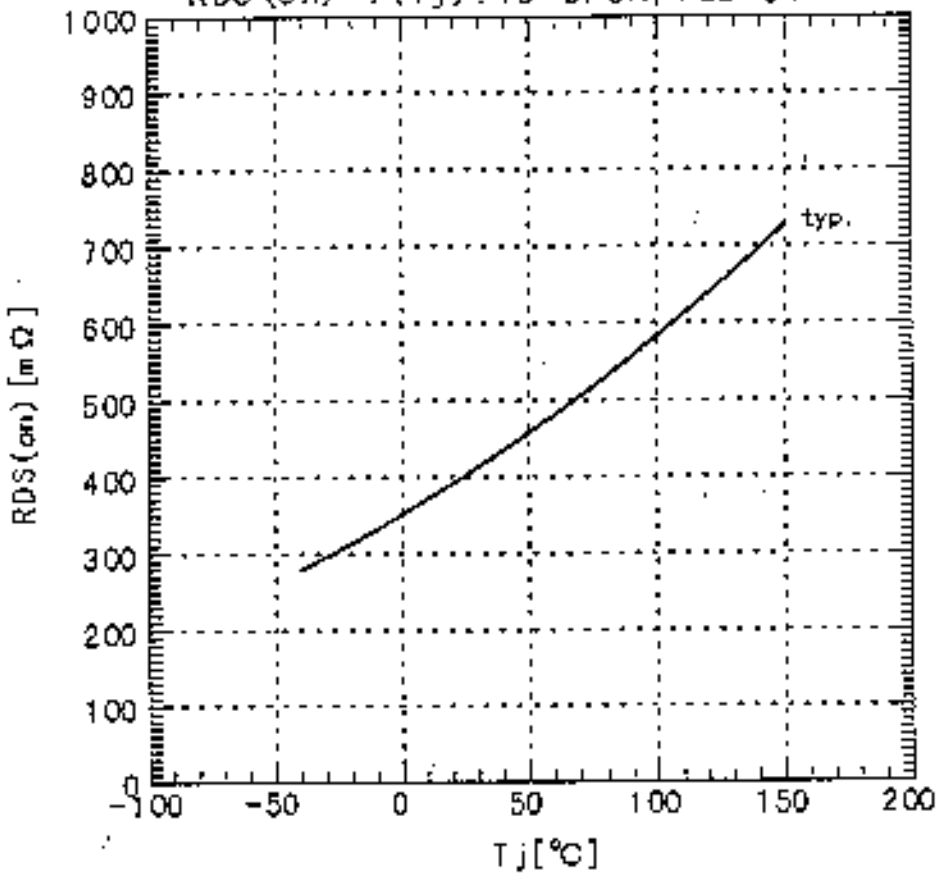


Gate-source leakage current

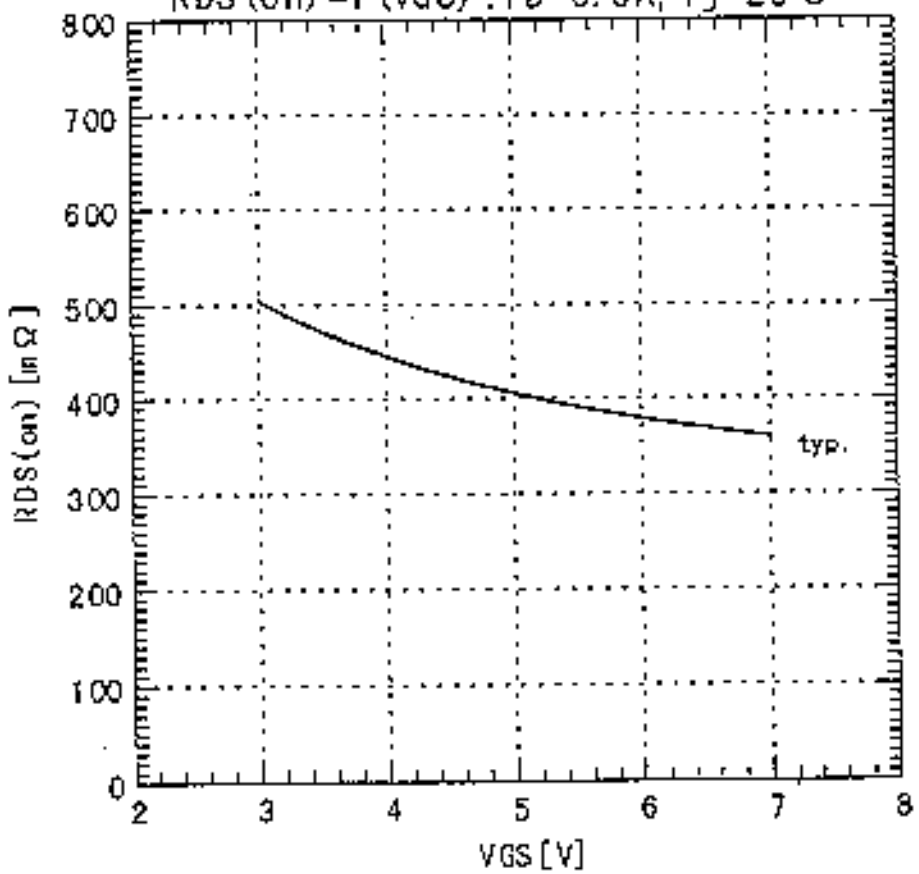
IGS(n)=f(VGS) : Tj=25°C, VDS=0V



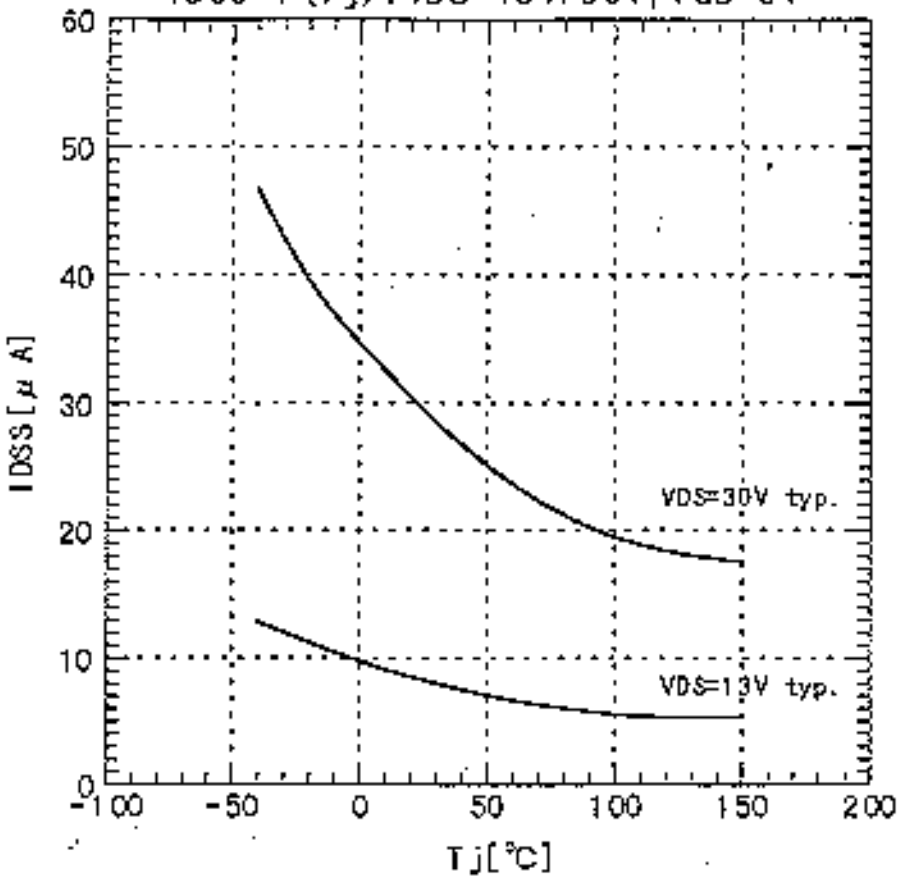
Drain-source on-state resistance
RDS(on)=f(Tj) : ID=0.5A, VGS=5V



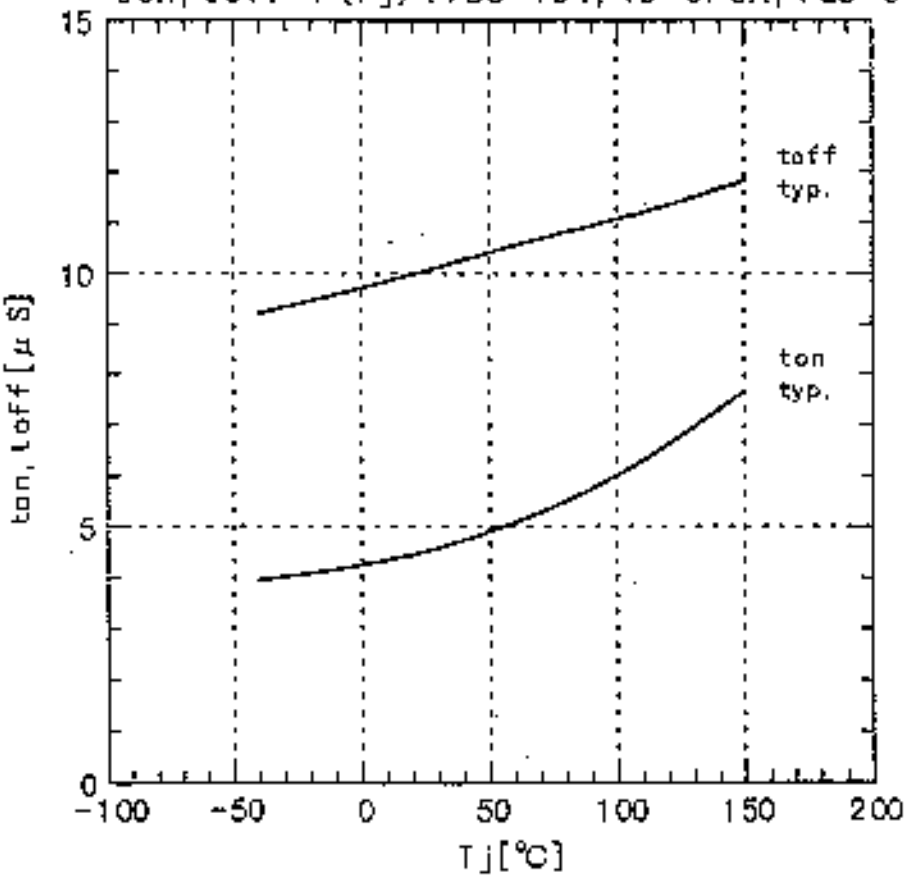
Drain-source on-state resistance
RDS(on)=f(VGS) : ID=0.5A, Tj=25°C



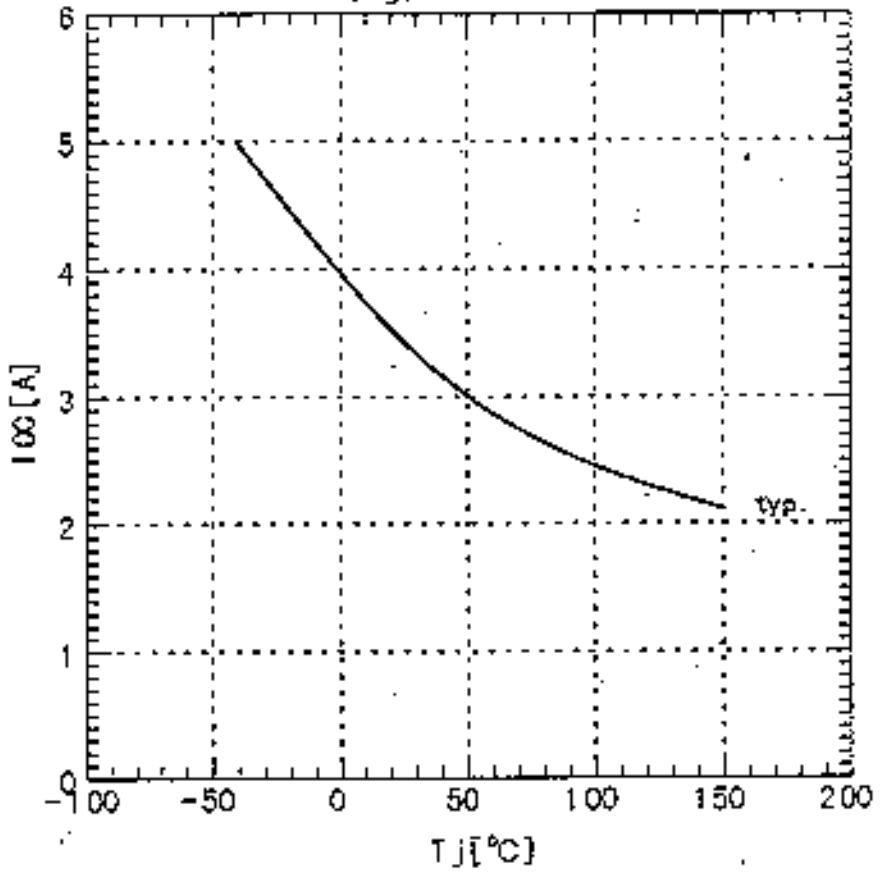
Zero gate voltage drain current
IDSS=f(Tj) : VDS=13V, 30V, VGS=0V



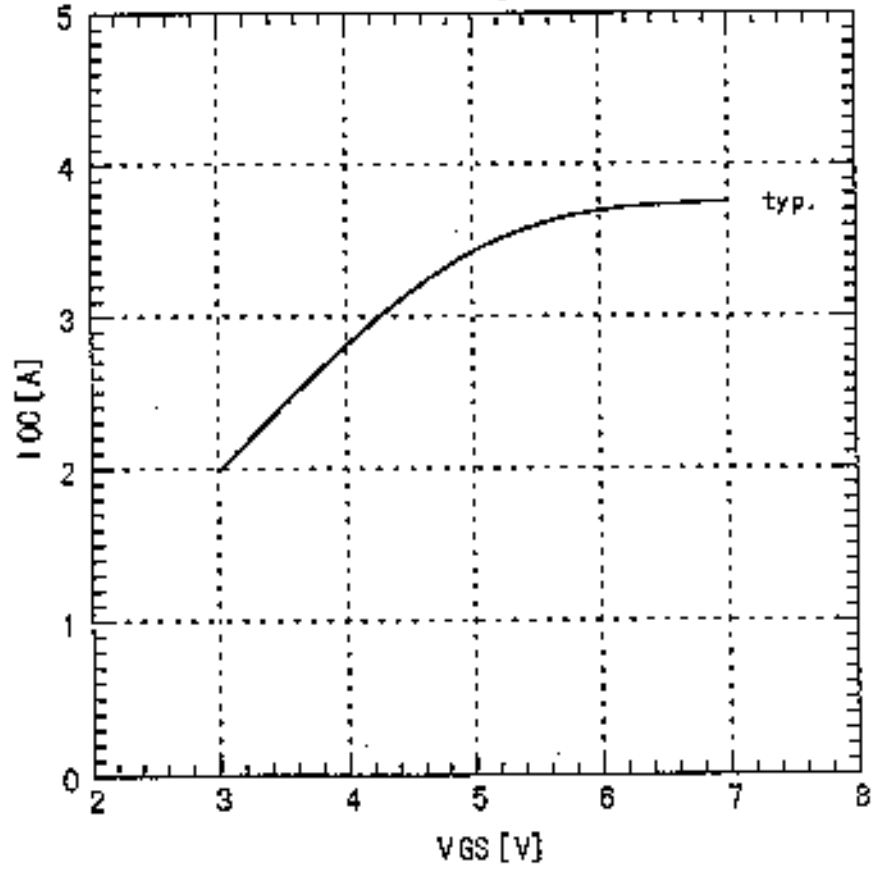
Turn-on time, Turn-off time
ton, toff=f(Tj) : VDS=13V, ID=0.5A, VGS=5V



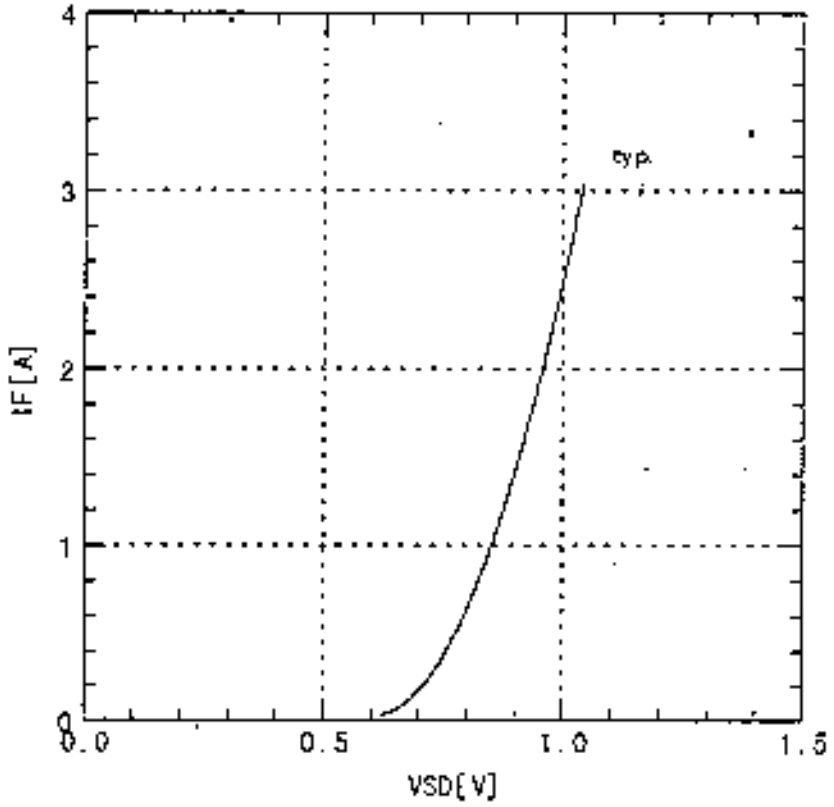
Short circuit proetection
IOC=f(Tj) :VGS=5V



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



Forward charateristic of reverse of diode
IF=f(VSD):VGS=0V



Continuous drain current VS Ambient temperature
ID=f(Ta):Maunting Pad Size(β)=5mm