SPECIFICATION

Device Name : Intelligent Power MOSFET

Type Name : F5018-S

Spec. No. : MS5F3728

Fuji Electric Co.,Ltd.
Matsumoto Factory

	DATE	NAME	APPROVED
DRAWN	July-31-1996	N. Taezawa	
CHECKED	July 31 1996	S. Furuhata	

Fuji Electric Co.,Ltd.

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H04-004-07

Revised Records

Date	Classi-fication	Ind.	Content	Applied date	Drawn	Checked	Approved
July-31-1996	enactment	—	———	Issued date	—	S.Furukata	
Feb-25-1999	change	a	6/13 page Outview Lot.No. 4→5 figures	Feb-25-1999	S.Kiuchi	S.Furukata	S.Furukata

1. Scope
This specifies Fuji Intelligent Power MOSFET　F 5 0 1 8 − S

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

3. Application
For switching

4. Outview
K pack (EIAJ SC-63) 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	8	A	T c = 2 5 ℃
Maximum power dissipation	P_D	1 5	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
	$I_{GS(un)}$	**				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

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

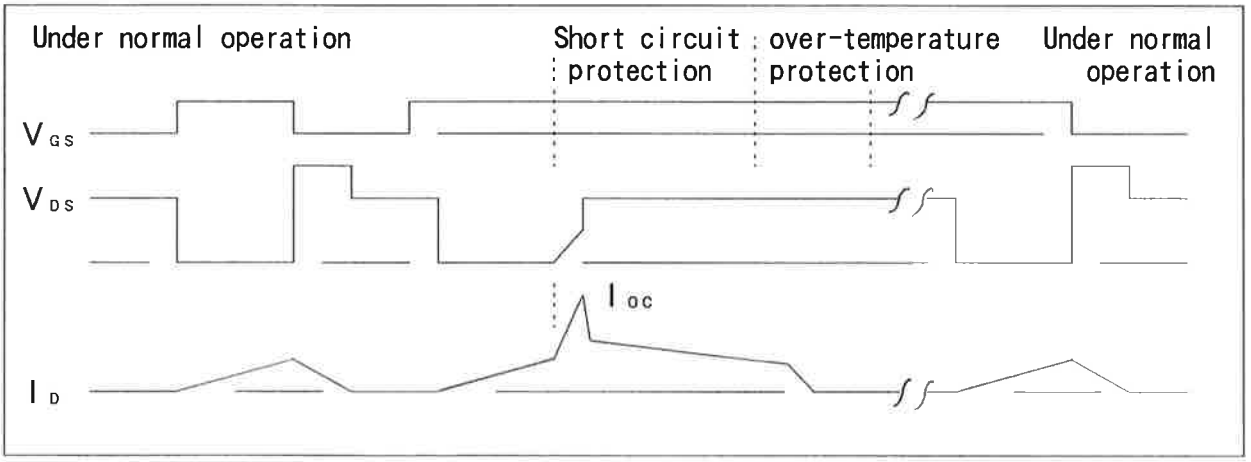
7. Thermal resistance

Description	Symbol	Conditions	Characteristics			Unit
			Min.	Typ.	Max.	
Thermal resistance	$Rth_{(j-c)}$	Junction-case			8.3	℃/W
	$Rth_{(j-a)}$	Junction-ambient			125	℃/W

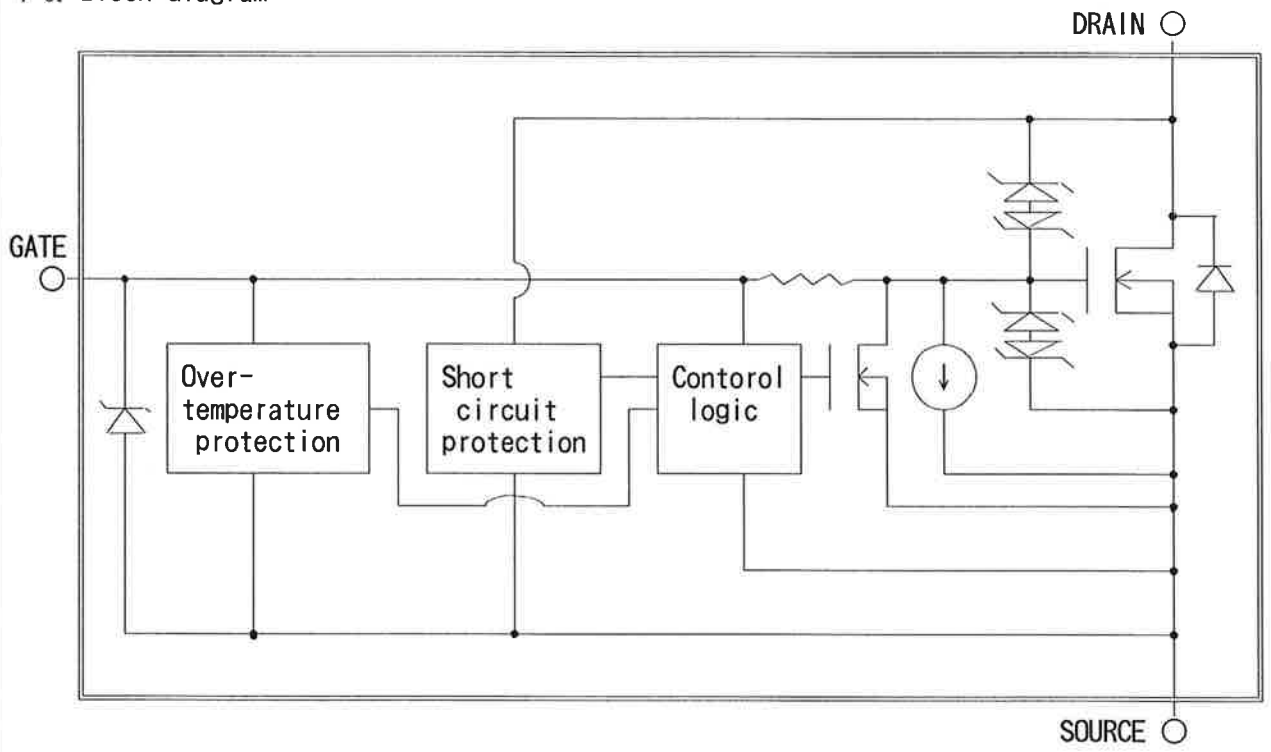
8. Electrostatic discharge

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

9. Timing chart

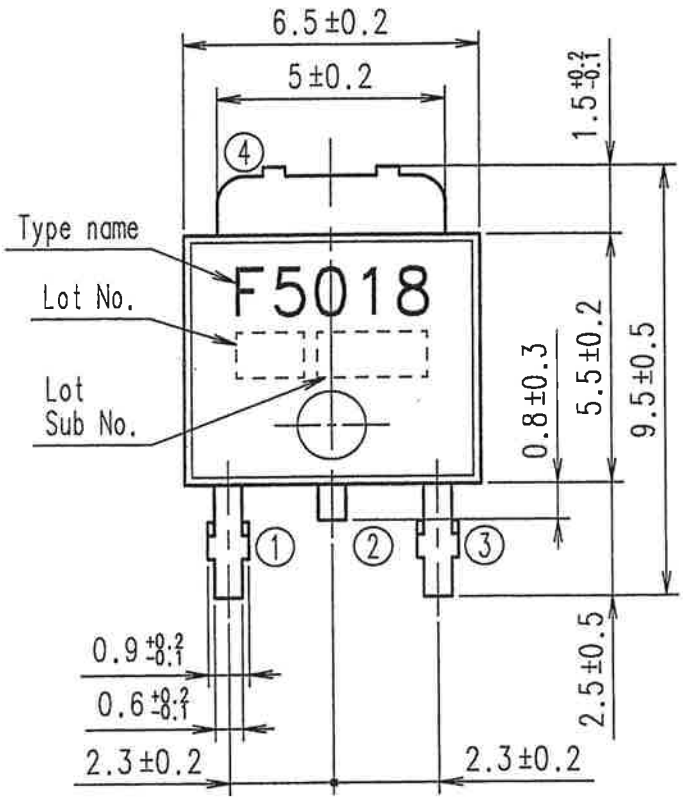


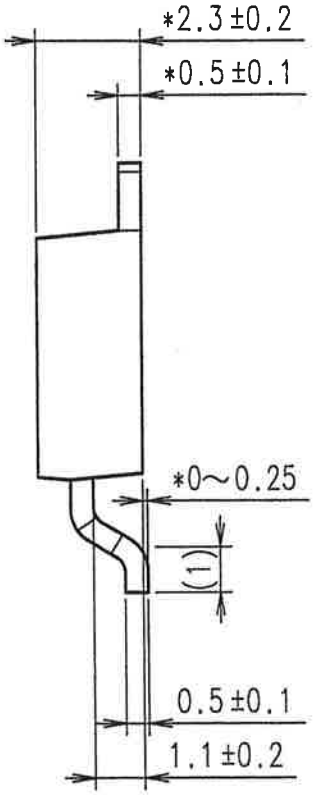
10. Block diagram



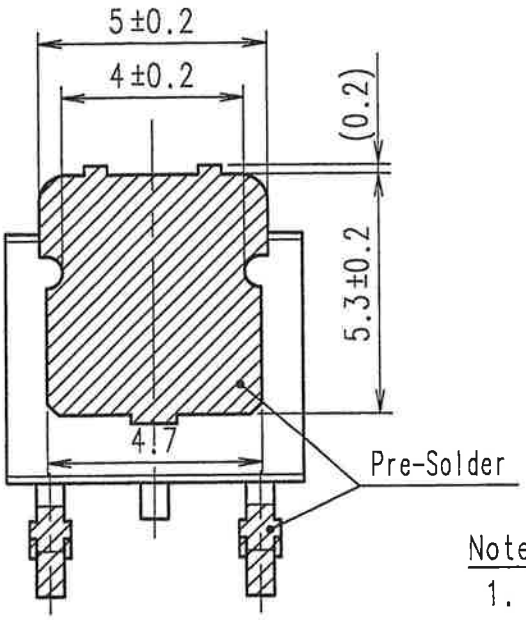
FUJI INTELLIGENT POWER MOS FET

Type: F5018-S





BOTTOM VIEW



CONNECTION

① GATE
②④ DRAIN
③ SOURCE

JEDEC: TO-252
EIAJ: SC-63

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

DIMENSIONS ARE IN MILLIMETERS. ⓐ

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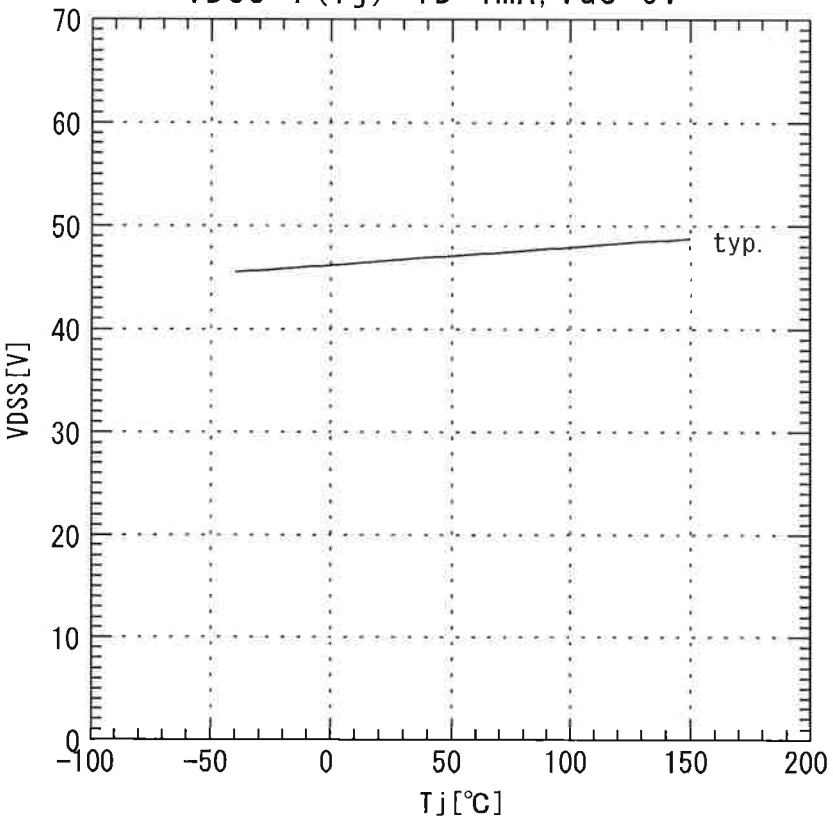
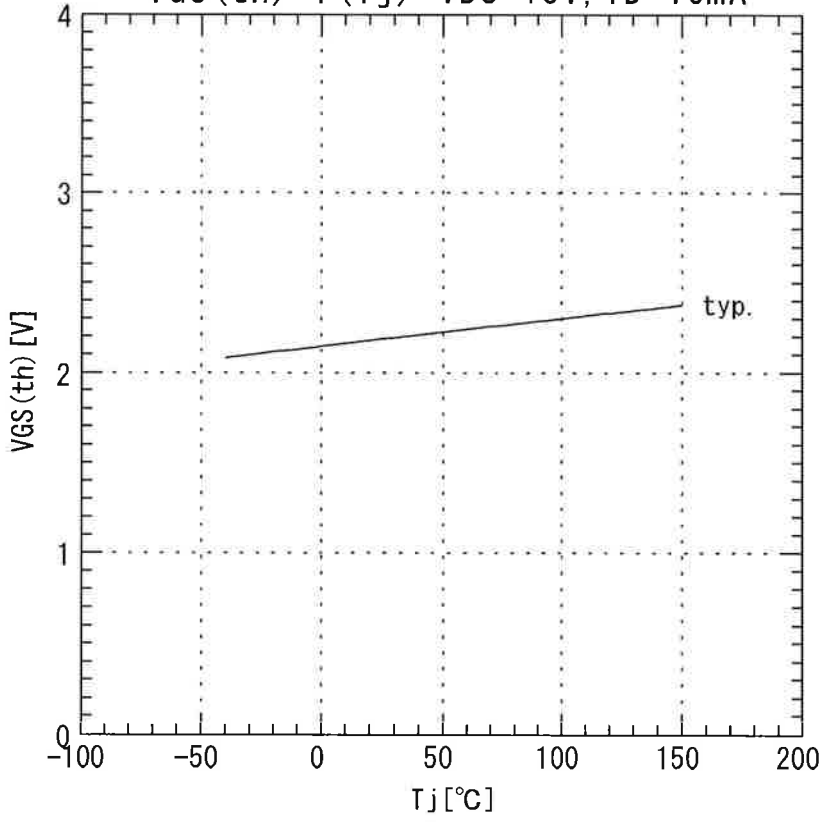
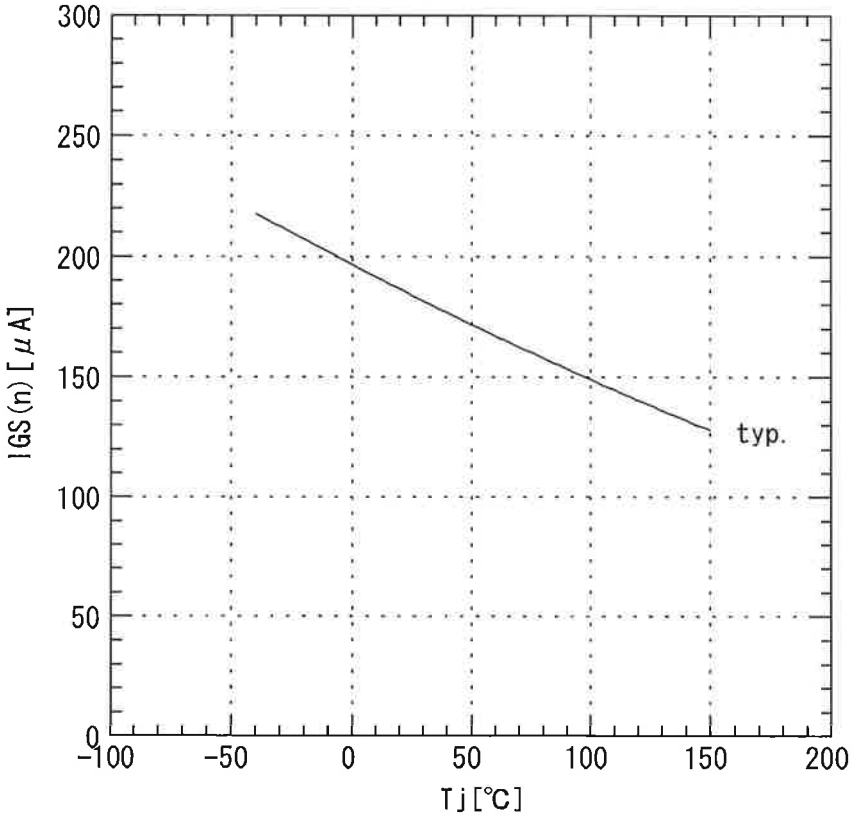
Drain-source clamp voltage
VDSS=f(Tj) : ID=1mA, VGS=0V



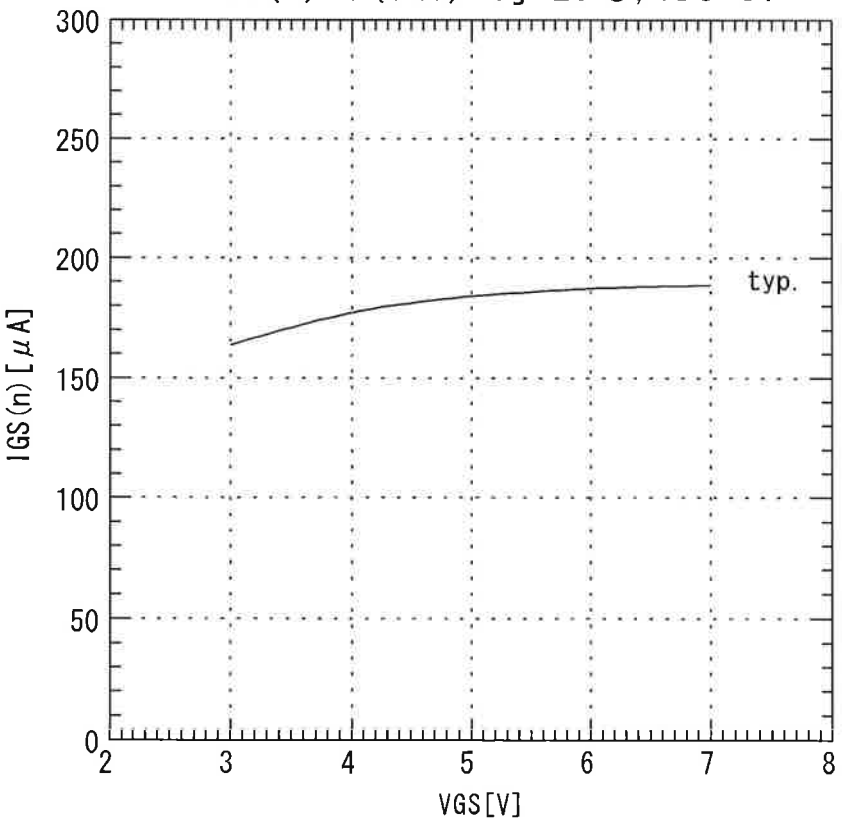
Gate threshold voltage
VGS(th)=f(Tj) : VDS=13V, ID=10mA



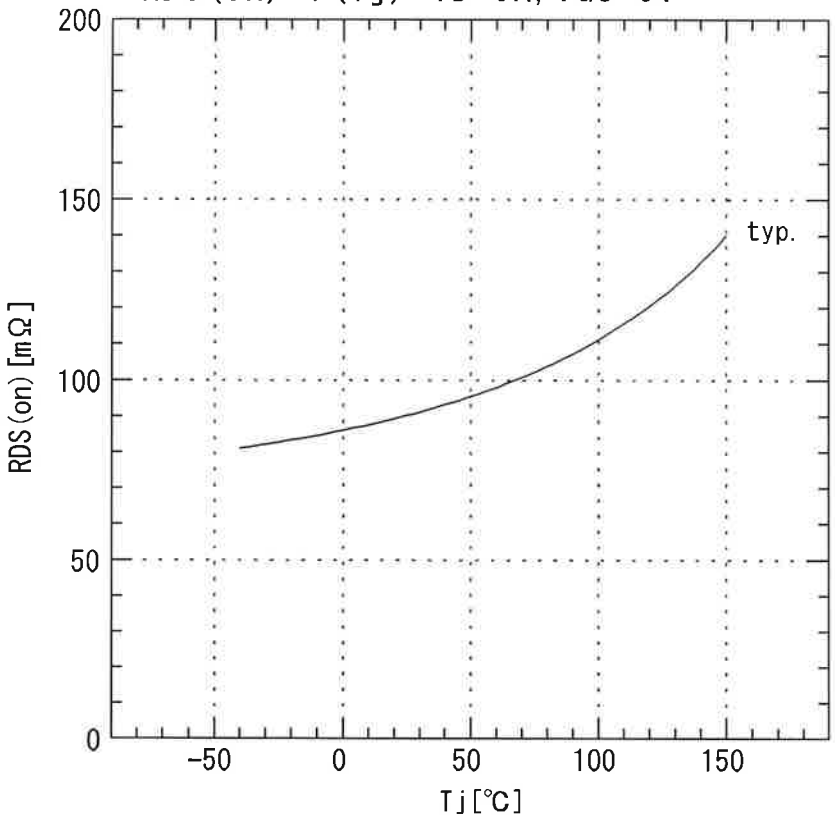
Gate-source leakage current
IGS(n)=f(Tj) : VGS=5V, VDS=0V



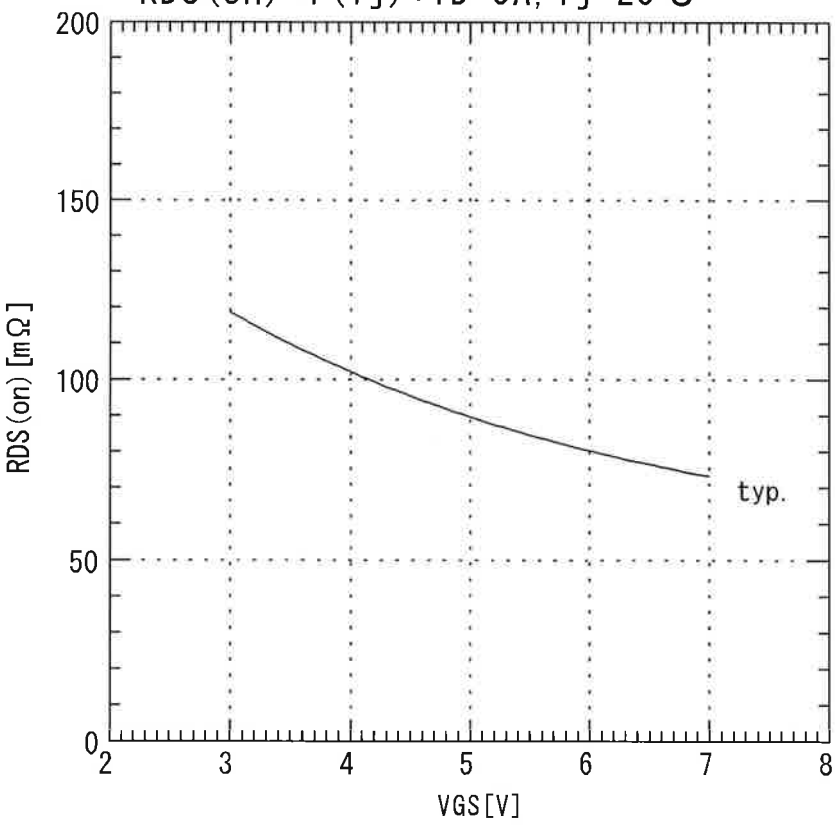
Gate-source leakage current
IGS(n)=f(VGS) : Tj=25℃, VDS=0V



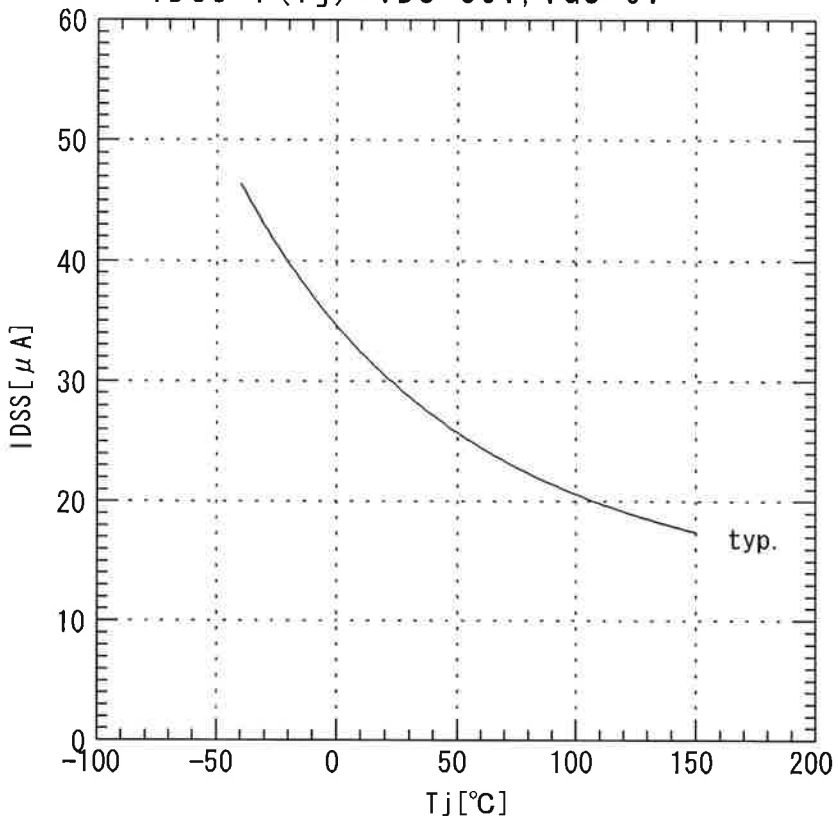
Drain-source on-state resistance
RDS(on)=f(Tj) : ID=5A, VGS=5V



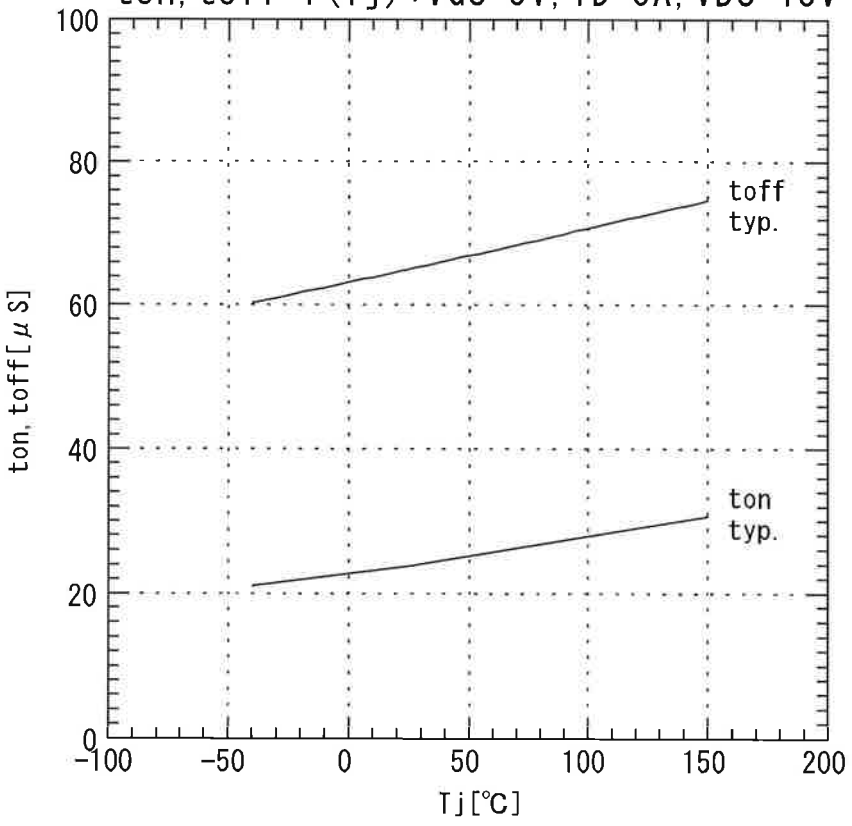
Drain-source on-state resistance
RDS(on)=f(Tj) : ID=5A, Tj=25℃



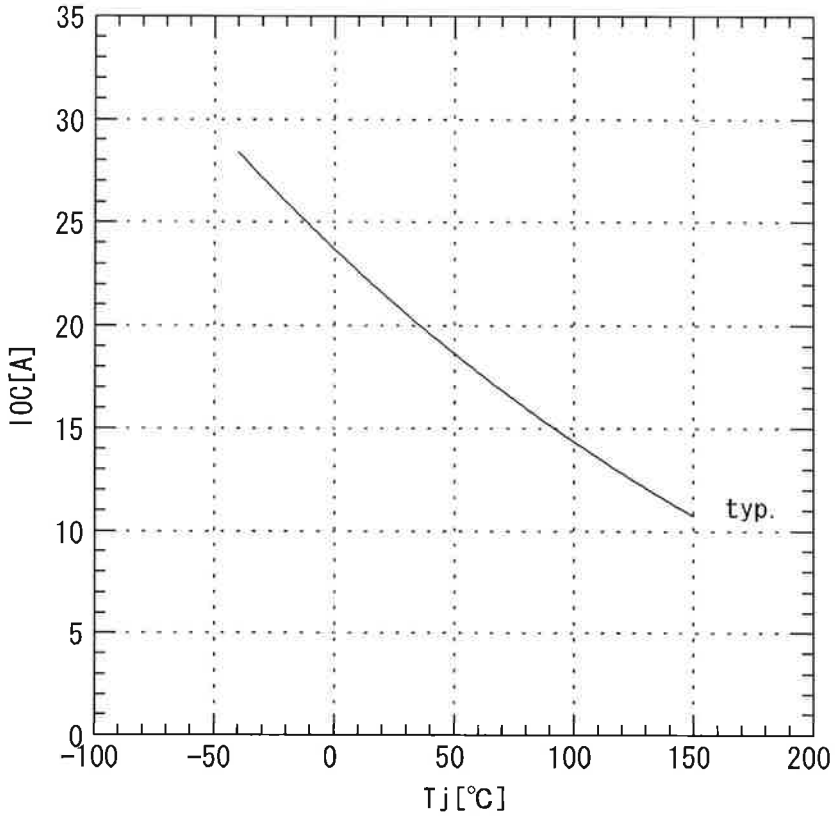
Zero gate voltage drain current
IDSS=f(Tj):VDS=30V, VGS=0V



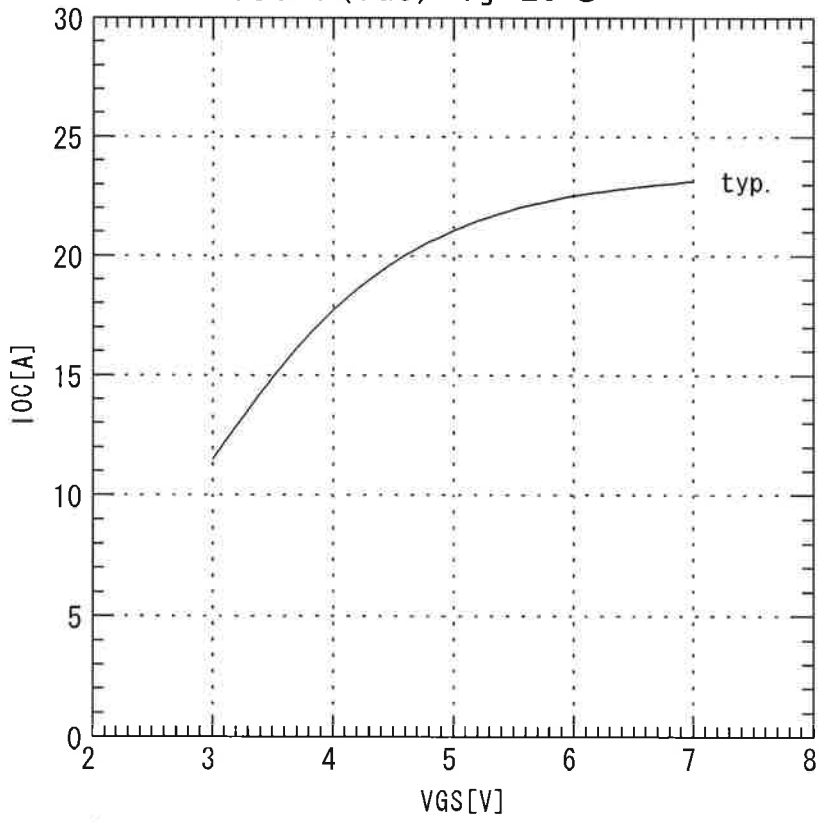
Turn-on time, Turn-off time
ton, toff=f(Tj):VGS=5V, ID=5A, VDS=13V



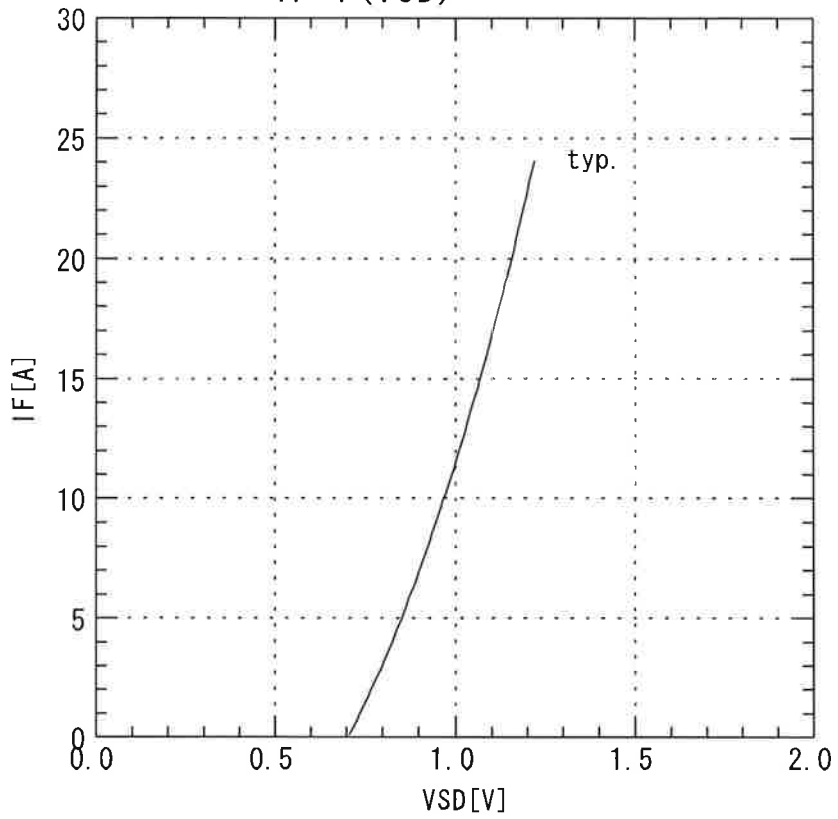
Short circuit detection
IOC=f(Tj) : VGS=5V



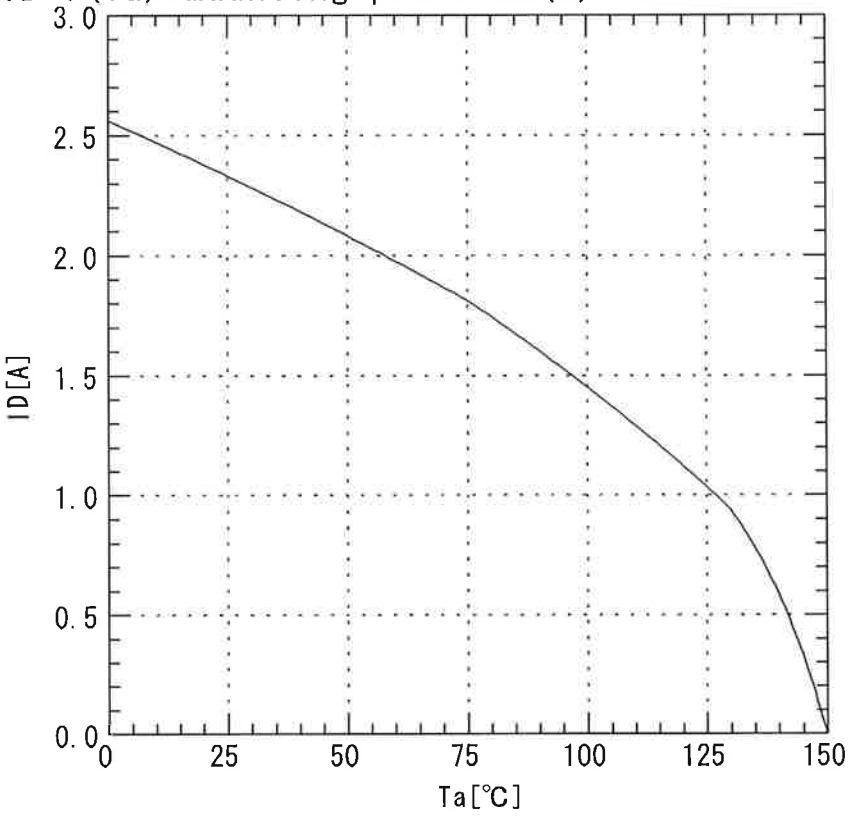
Short circuit detection
IOC=f(VGS) : Tj=25°C



Forward on voltage
IF=f(VSD)



Continuous drain current VS Ambient temperature
ID=f(Ta):Maunting pad size(a)=7mm



Mounting pad size VS Drain current ratio
Drain current ratio=f(Mounting pad size)