

SPECIFICATION

DEVICE NAME : Power MOSFET

TYPE NAME : 2SK2807-01L,S

SPEC. NO. :

Fuji Electric Co.,Ltd.

This Specification is subject to change without notice.

	DATE	NAME	APPROVED		Fuji Electric Co.,Ltd.	
DRAWN					DWG. NO.	1/4
CHECKED						

- 1.Scope This specifies Fuji Power MOSFET 2SK2807-01L,S
- 2.Construction N-Channel enhancement mode power MOSFET
- 3.Applications for Switching
- 4.Outview T-Pack Outview See to 5/14,6/14 page

5.Absolute Maximum Ratings at Tc=25°C (unless otherwise specified)

Description	Symbol	Characteristics	Unit	Remarks
Drain-Source Voltage	V_{DS}	30	V	
Continuous Drain Current	I_D	± 35	A	
Pulsed Drain Current	I_{DP}	± 140	A	
Gate-Source Voltage	V_{GS}	± 16	V	
Maximum Avalanche Energy	E_{AV}	129.3	mJ	*1
Maximum Power Dissipation	P_D	30	W	
Operating and Storage	T_{ch}	150	°C	
Temperature range	T_{stg}	-55 to +150	°C	

*1 L=0.070mH,Vcc=12V

6.Electrical Characteristics at Tc=25°C (unless otherwise specified)

Static Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$I_D=1mA$ $V_{GS}=0V$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$I_D=1mA$ $V_{DS}=V_{GS}$	1.0	1.5	2.0	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=30V$ $V_{GS}=0V$	$T_{ch}=25^\circ C$	10	500	μA
			$T_{ch}=125^\circ C$	0.2	1.0	mA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 16V$ $V_{DS}=0V$		10	100	nA
Drain-Source On-State Resistance	$R_{DS(on)}$	$I_D=17.5A$	$V_{GS}=4V$	22	30	m Ω
			$V_{GS}=10V$	14	20	

Dynamic Ratings

Description	Symbol	Conditions	min.	typ.	max.	Unit
Forward Transconductance	g_{fs}	$I_D=17.5A$ $V_{DS}=25V$	16	33		S
Input Capacitance	C_{iss}	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$		1100	1650	pF
Output Capacitance	C_{oss}			550	830	
Reverse Transfer Capacitance	C_{rss}			240	360	
Turn-On Time	$t_{d(on)}$	$V_{cc}=15V$		9	15	ns
	t_r	$V_{GS}=10V$		15	23	
Turn-Off Time	$t_{d(off)}$	$I_D=35A$		75	115	
	t_f	$R_{GS}=10\Omega$		50	75	

Reverse Diode

Description	Symbol	Conditions	min.	typ.	max.	Unit
Avalanche Capability	I_{AV}	$L=100\mu H$ $T_{ch}=25^\circ C$ See Fig.1 and Fig.2	35			A
Diode Forward On-Voltage	V_{SD}	$I_F=2 \times I_{DR}$ $V_{GS}=0V$ $T_{ch}=25^\circ C$		0.98	1.71	V
Reverse Recovery Time	t_{rr}	$I_F=2 \times I_{DR}$ $-di/dt=100A/\mu s$ $T_{ch}=25^\circ C$		50		ns
Reverse Recovery Charge	Q_{rr}			0.08		μc

7.Thermal Resistance

Description	Symbol	min.	typ.	max.	Unit
Channel to Case	$R_{th(ch-c)}$			4.16	$^\circ C/W$
Channel to Ambient	$R_{th(ch-a)}$			75.0	$^\circ C/W$

Fig.1 Test circuit

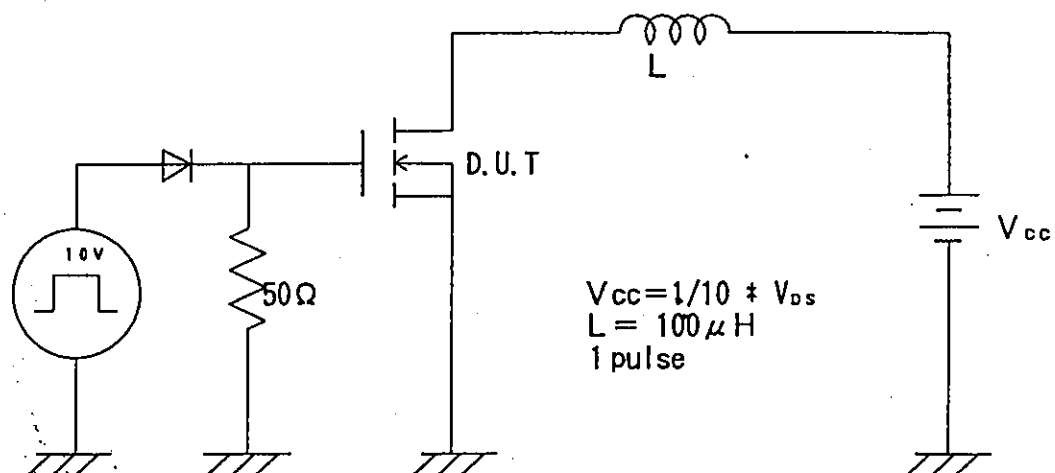
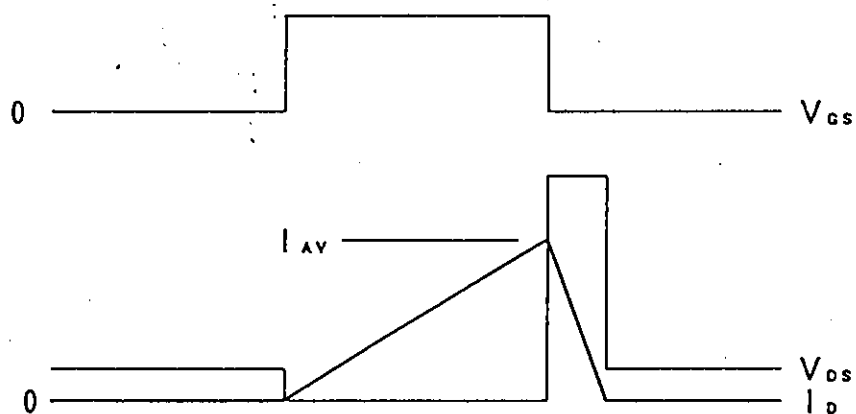
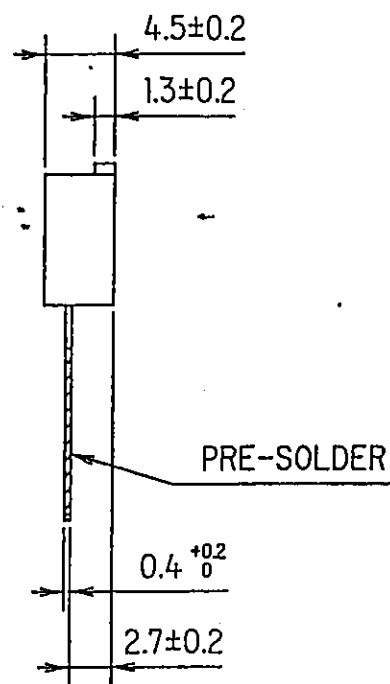
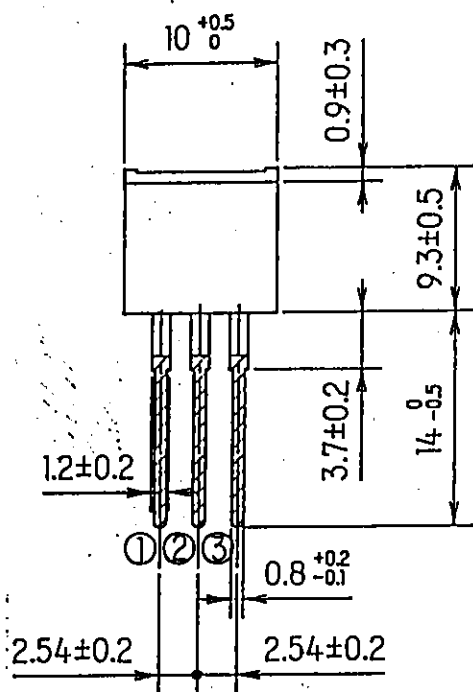


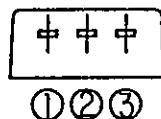
Fig.2 Operating waveforms



Type L



DIMENSIONS ARE IN MILLIMETERS.

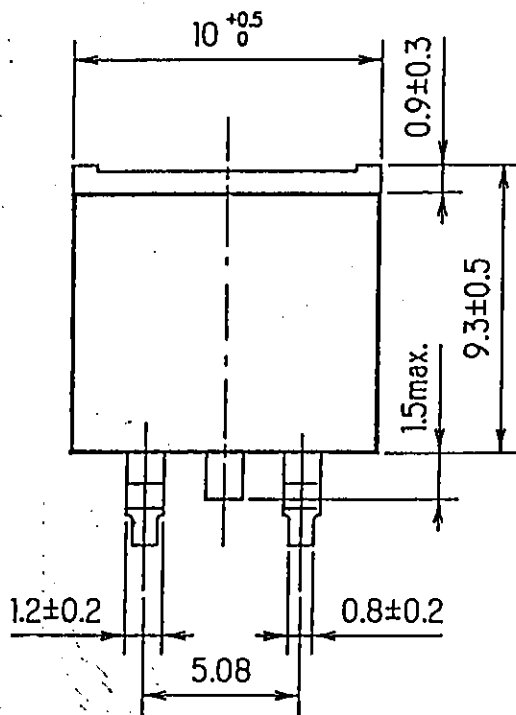


CONNECTION

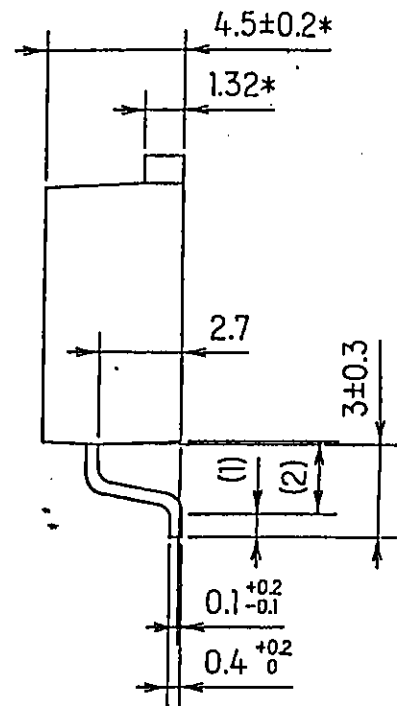
- ① GATE
- ② DRAIN
- ③ SOURCE

JEDEC : TO-220AB

Type S

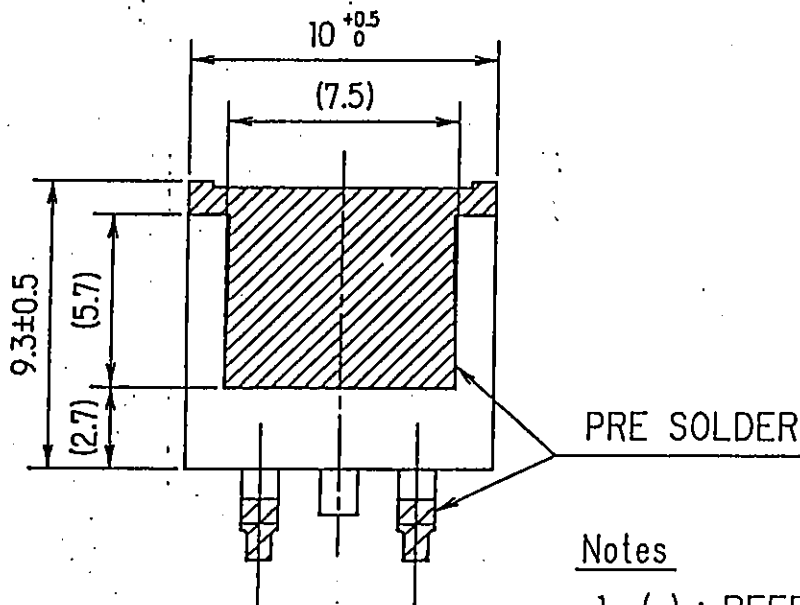


BOTTOM VIEW



CONNECTION

- ① GATE
- ② DRAIN
- ③ SOURCE



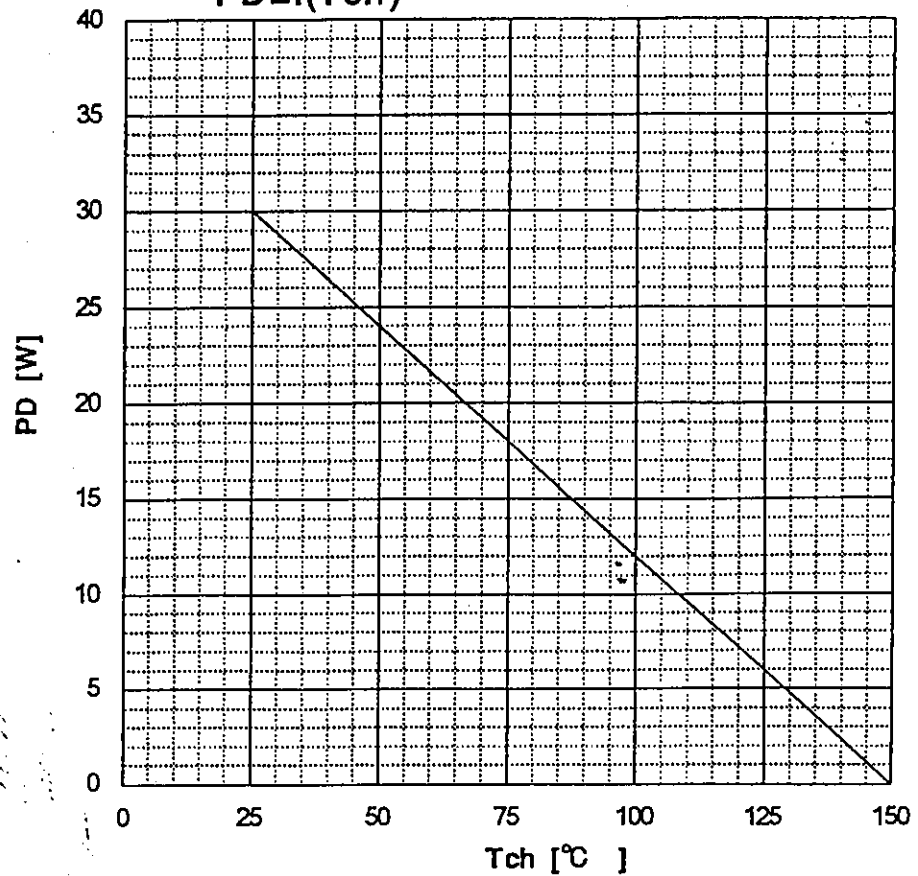
Notes

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

DIMENSIONS ARE IN MILLIMETERS.

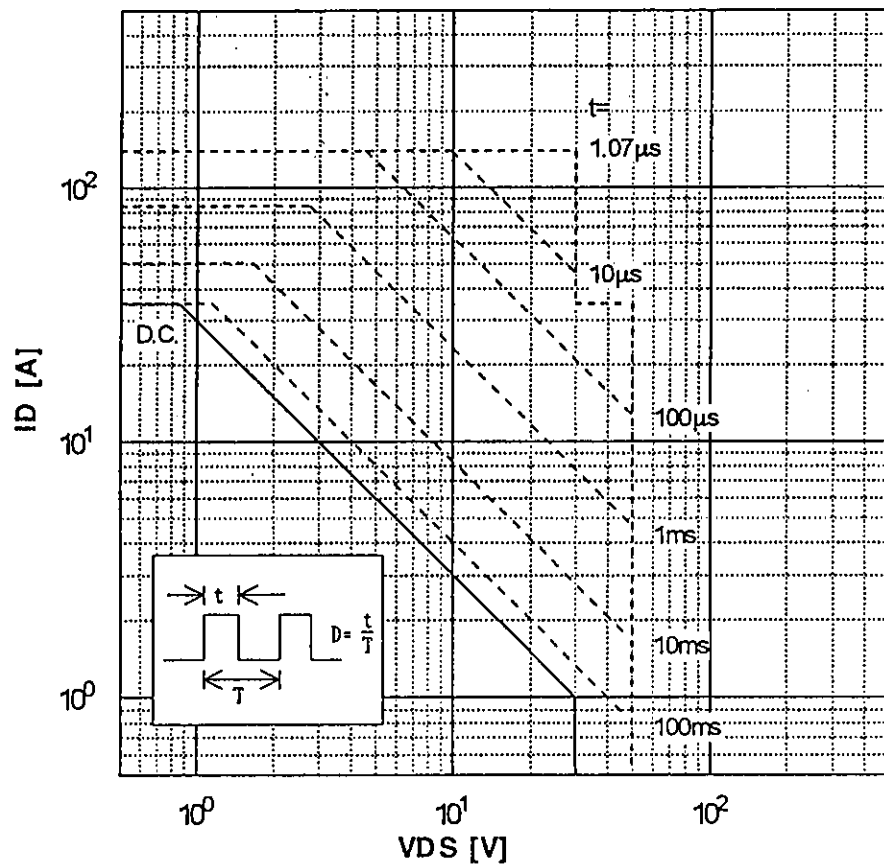
Allowable Power Dissipation vs. Tch

$$PD=f(T_{ch})$$



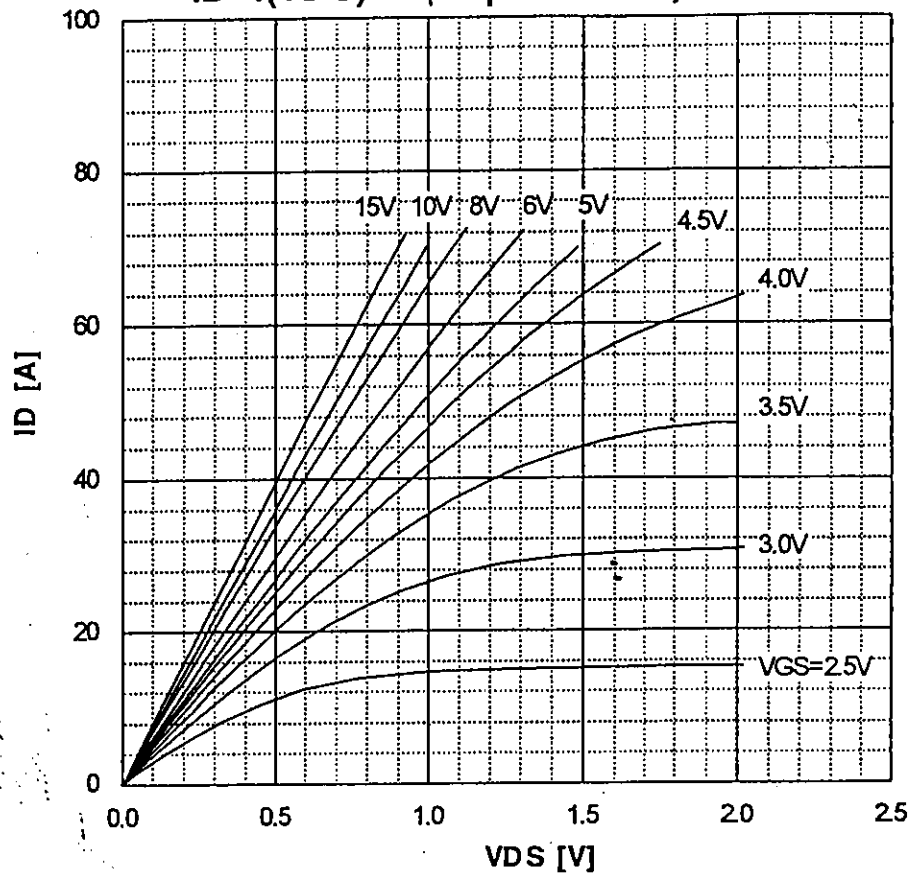
Safe operating area

$$ID=f(V_{DS}):D=0.01, T_c=25^{\circ}C$$



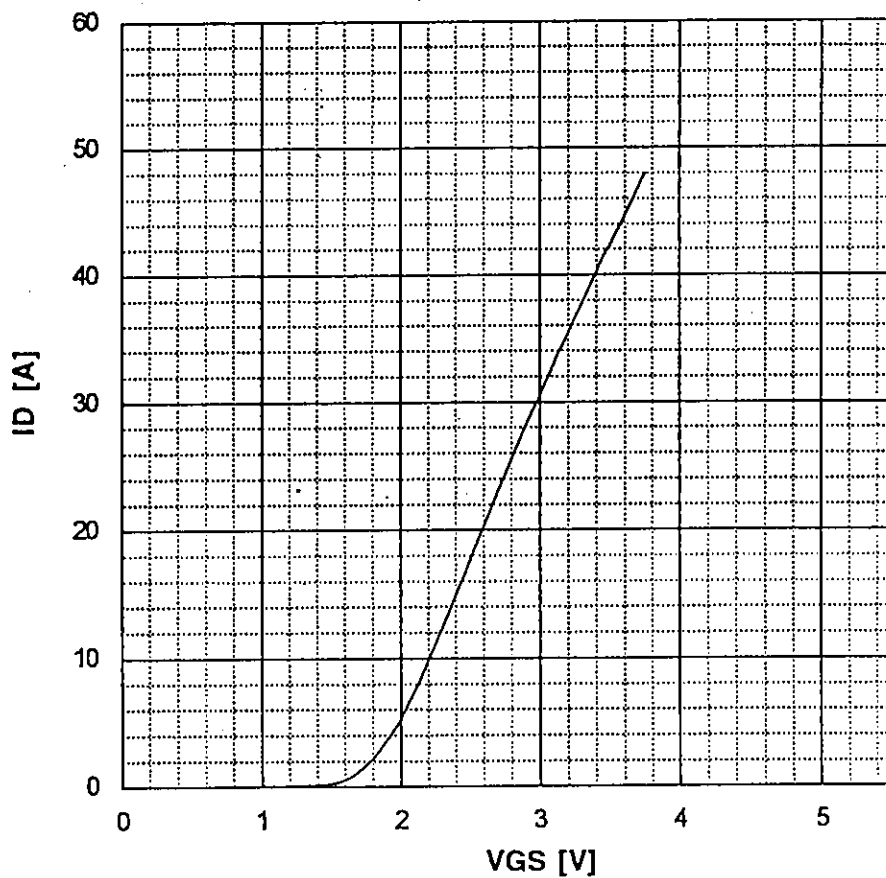
Typical Output Characteristics

$I_D = f(V_{DS})$: 80 μ s pulse test, $T_{ch} = 25^\circ\text{C}$



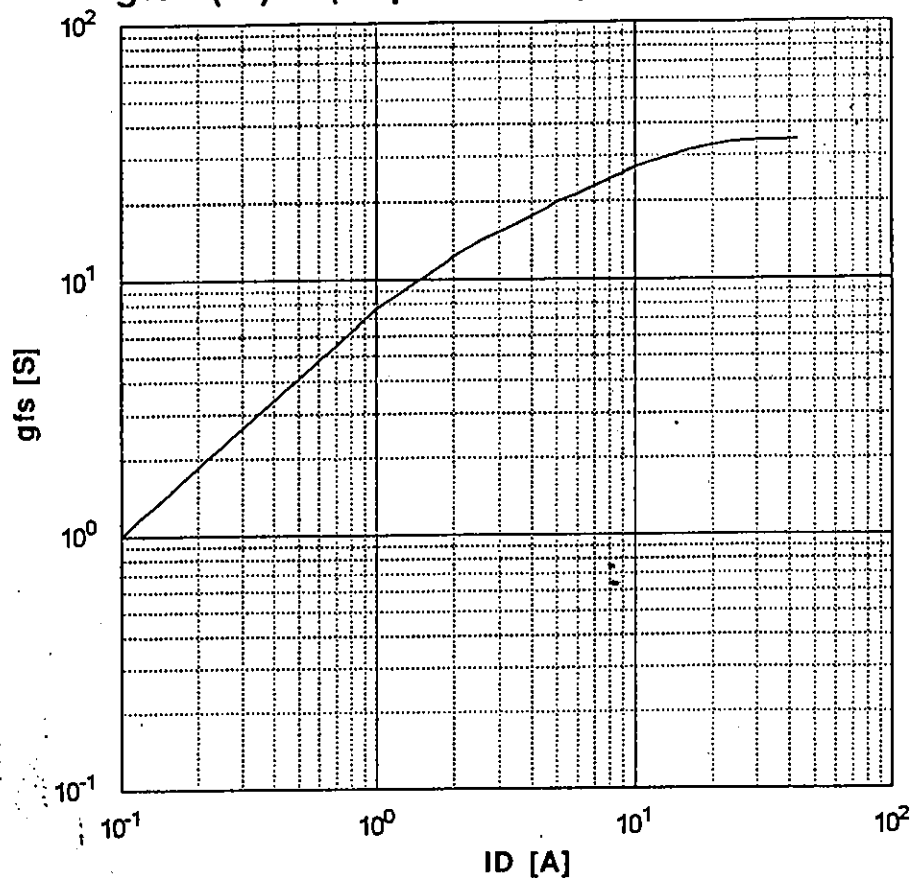
Typical Transfer Characteristic

$I_D = f(V_{GS})$: 80 μ s pulse test, $V_{DS} = 25V$, $T_{ch} = 25^\circ\text{C}$



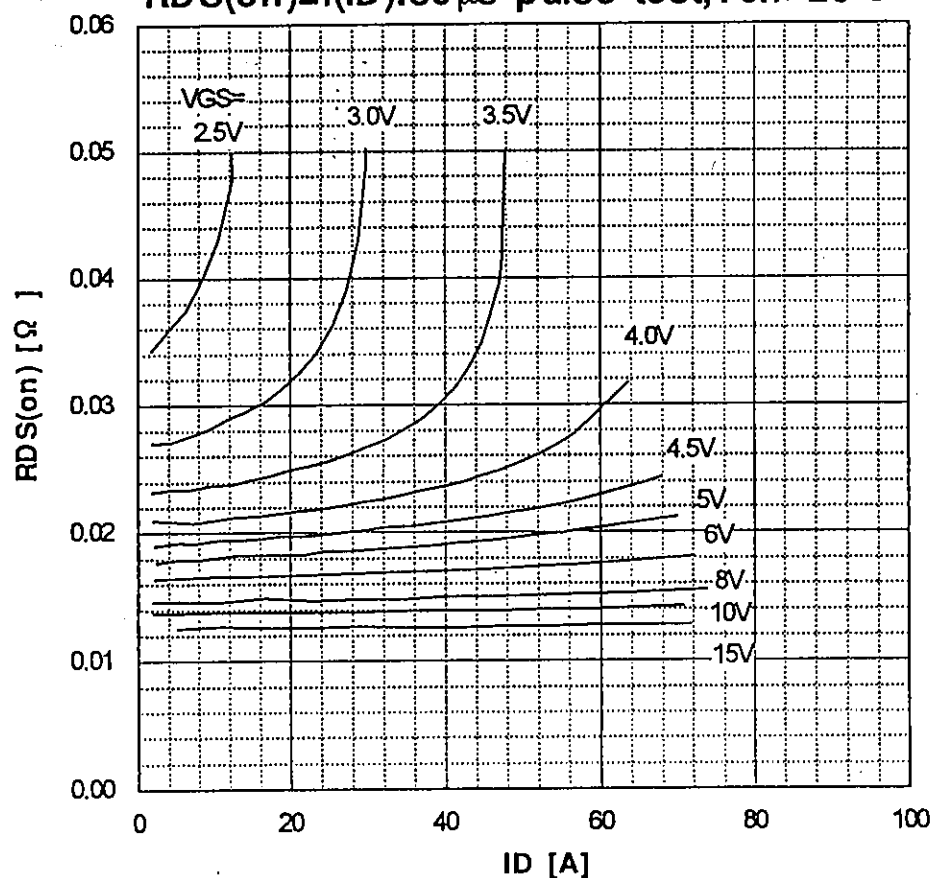
Typical Transconductance

$g_{fs}=f(I_D):80\mu s$ pulse test, $V_{DS}=25V$, $T_{ch}=25^\circ C$

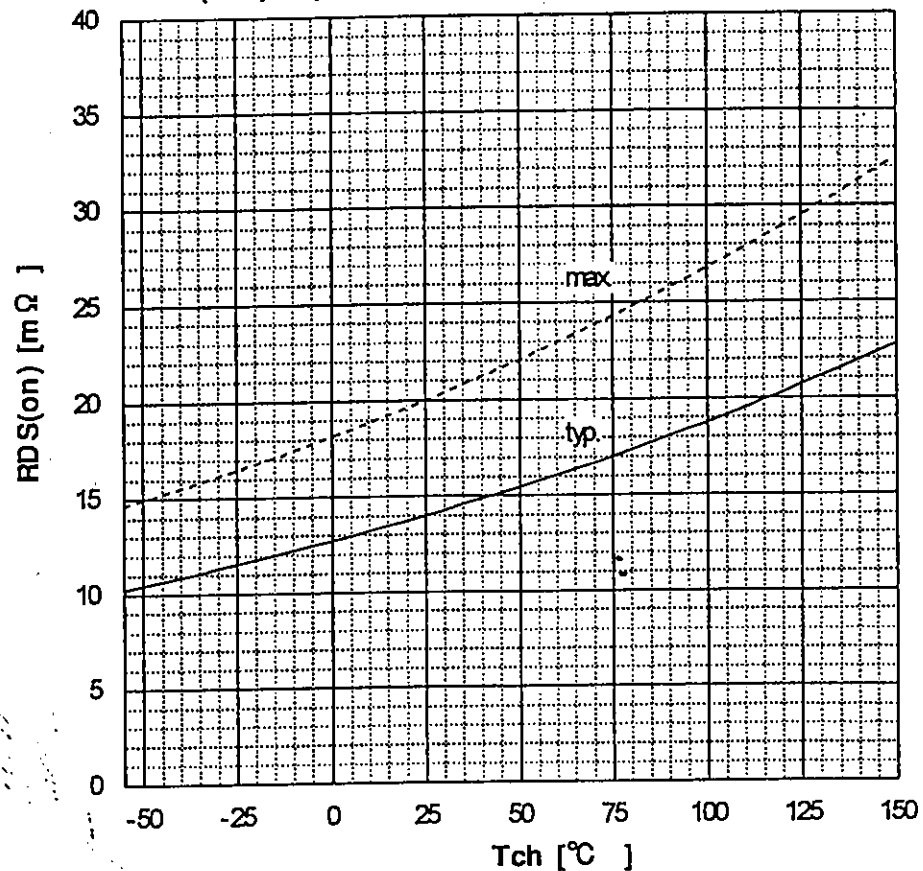


Typical Drain-Source on-state Resistance vs. I_D

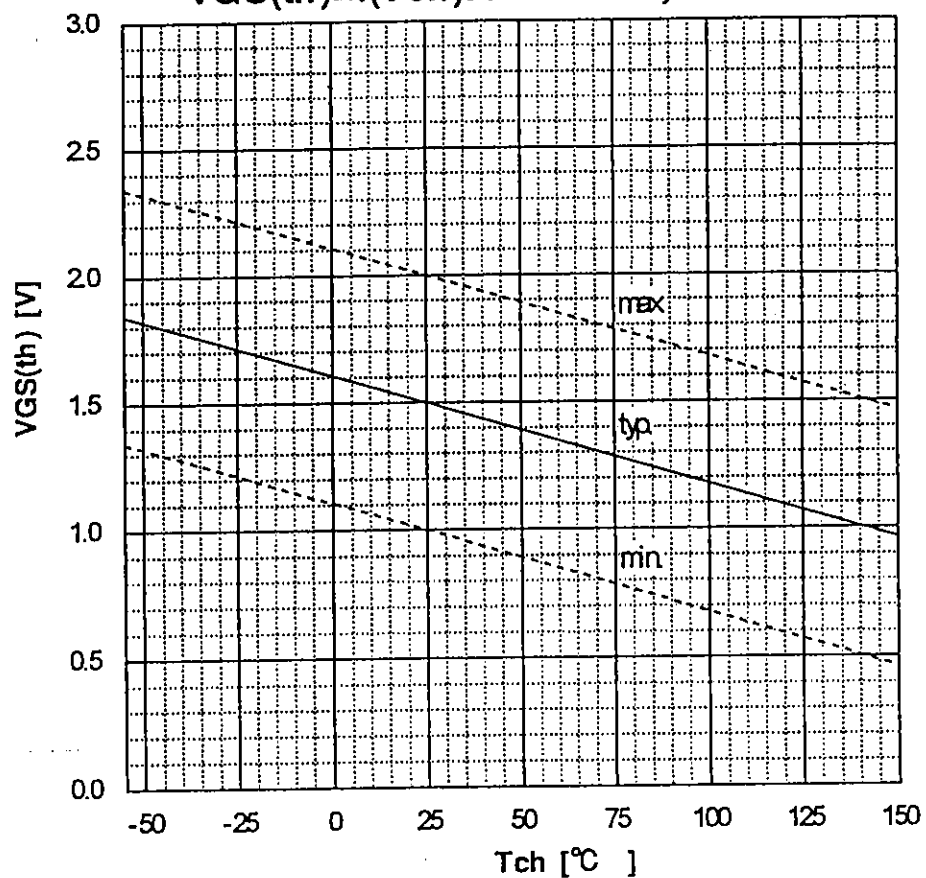
$R_{DS(on)}=f(I_D):80\mu s$ pulse test, $T_{ch}=25^\circ C$



Drain-Source On-state Resistance vs. Tch $R_{DS(on)} = f(T_{ch}) : I_D = 17.5A, V_{GS} = 10V$

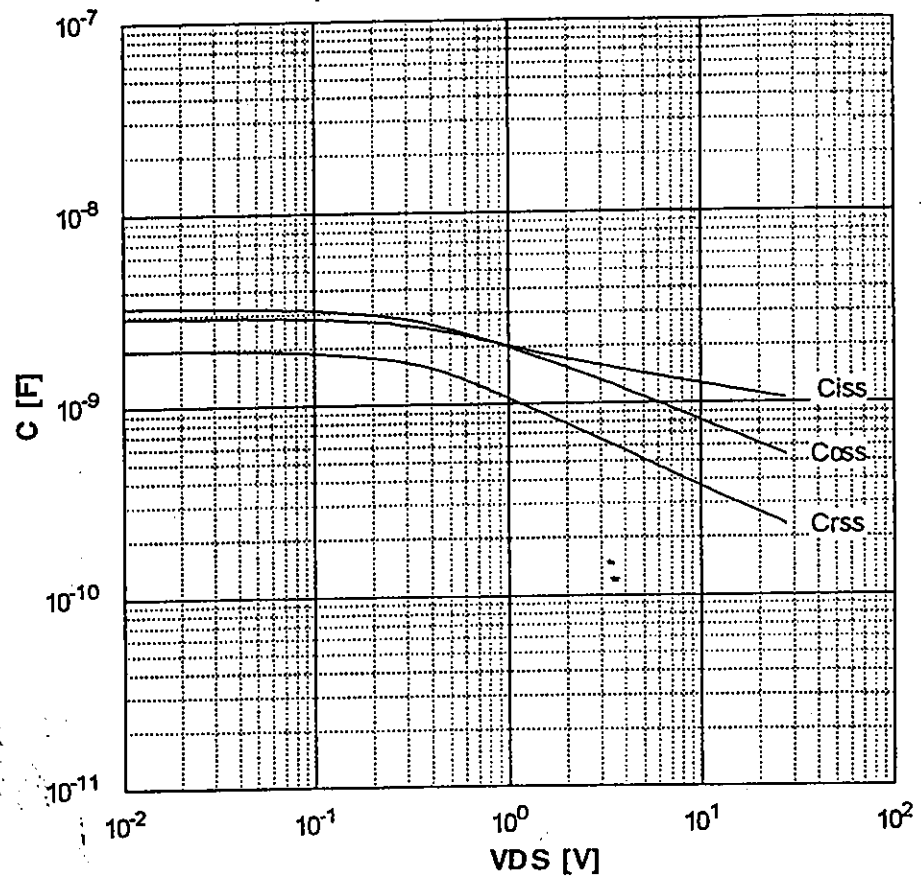


Gate Threshold Voltage vs. Tch $V_{GS(th)} = f(T_{ch}) : V_{DS} = V_{GS}, I_D = 1mA$



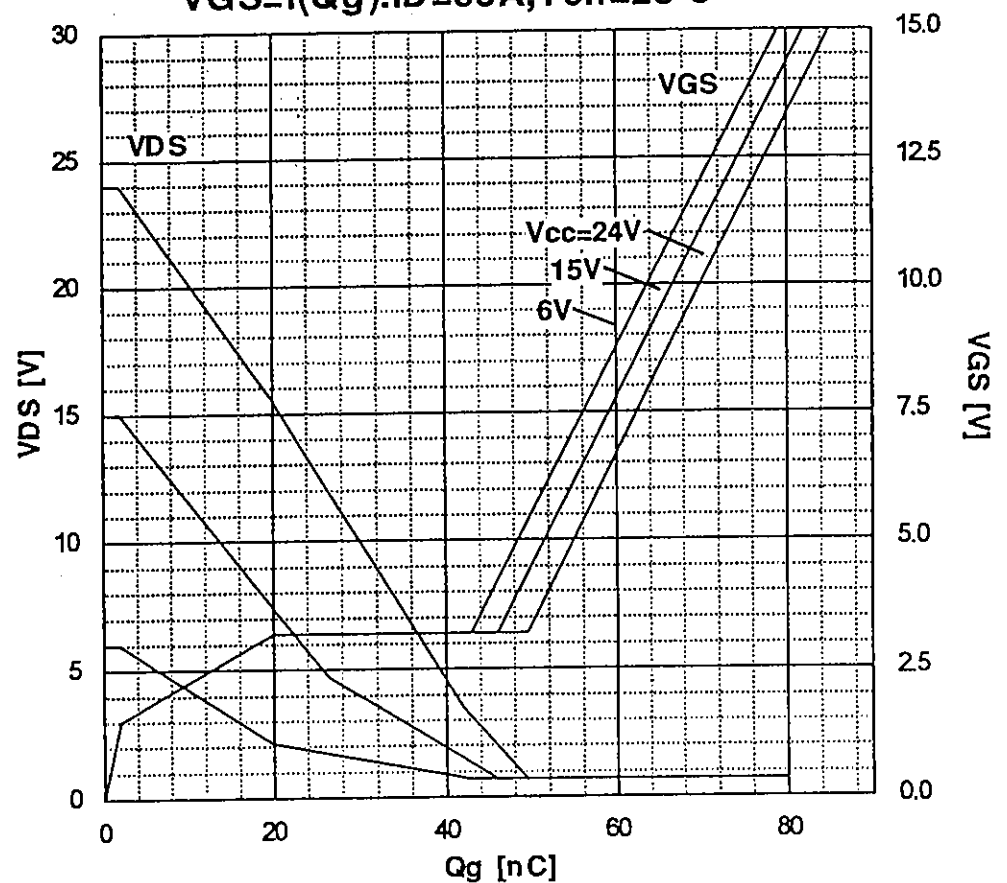
Typical Capacitances vs. VDS

$C=f(V_{DS}):V_{GS}=0V, f=1MHz$

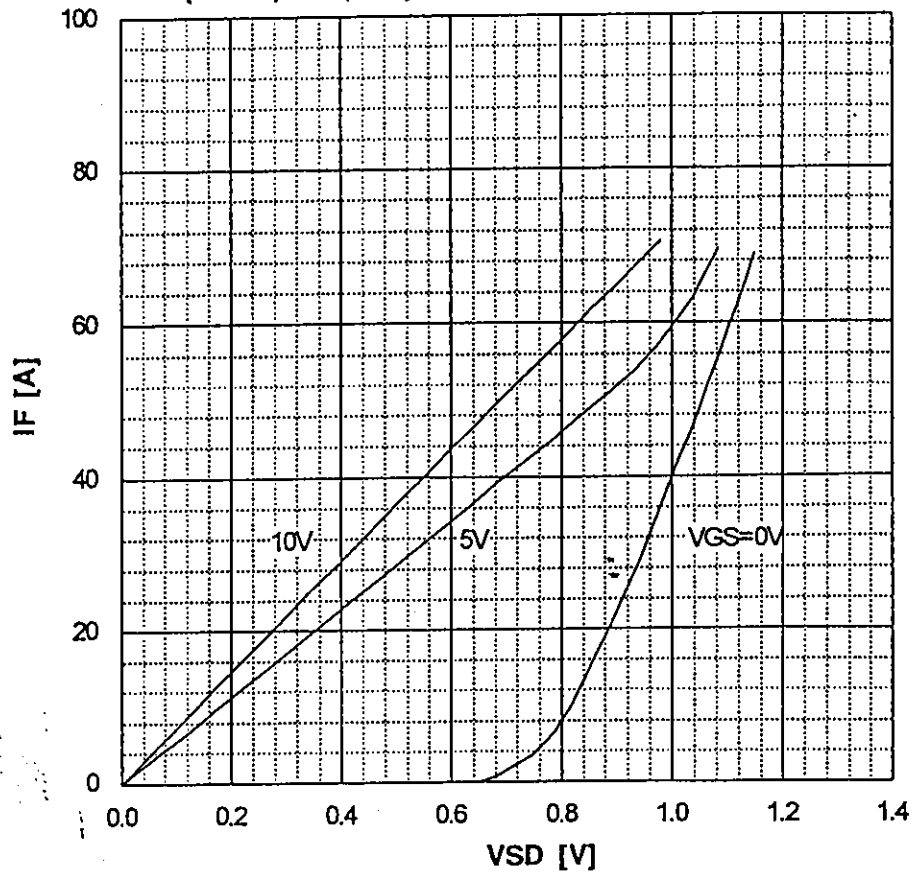


Typical Gate Charge Characteristics

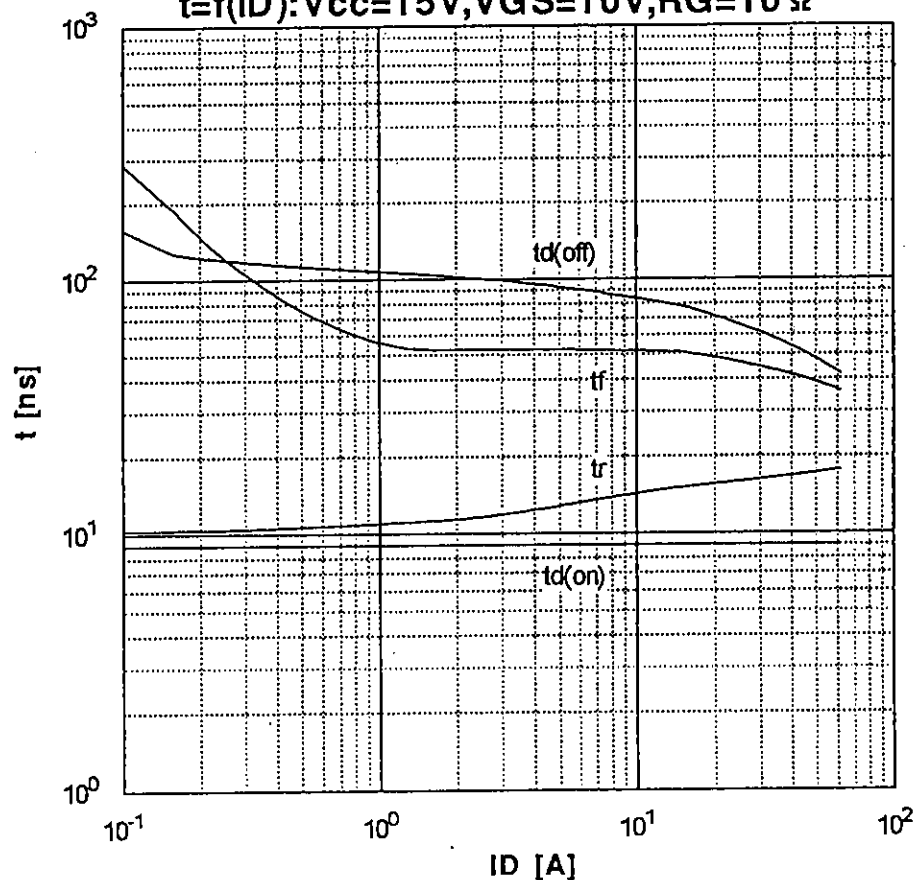
$V_{GS}=f(Q_g):I_D=35A, T_{ch}=25^\circ C$



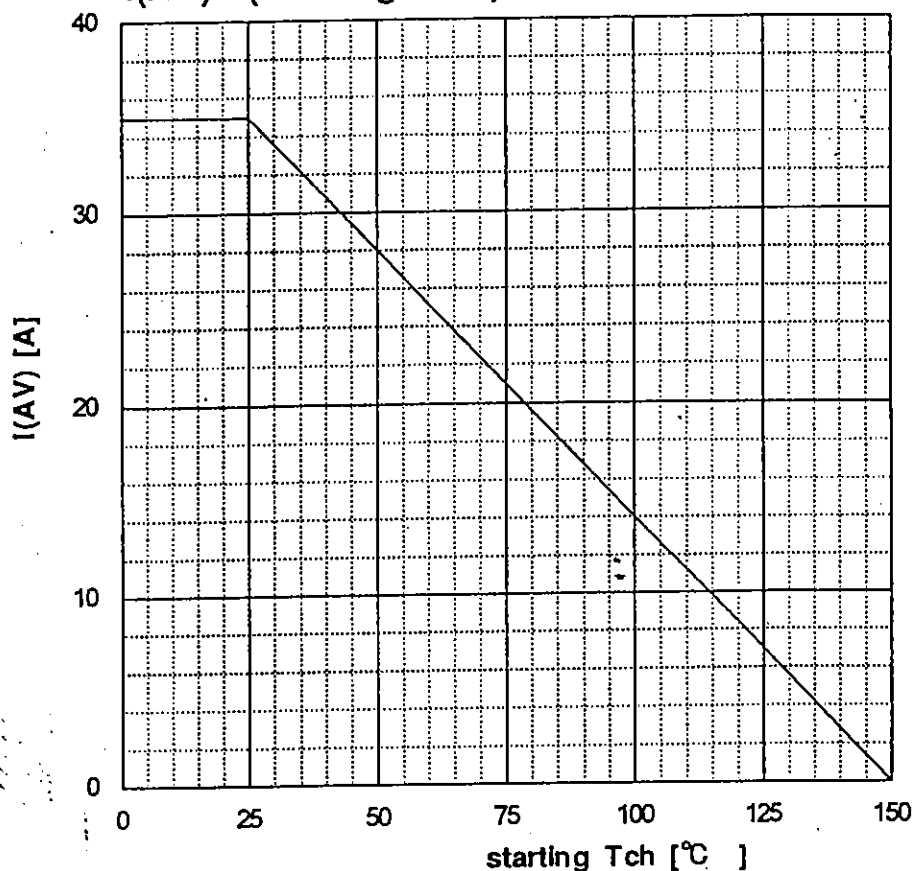
Typical Forward Characteristics of Reverse Diode $I_F = f(V_{SD})$: 80 μ s pulse test, $T_{ch} = 25^\circ\text{C}$



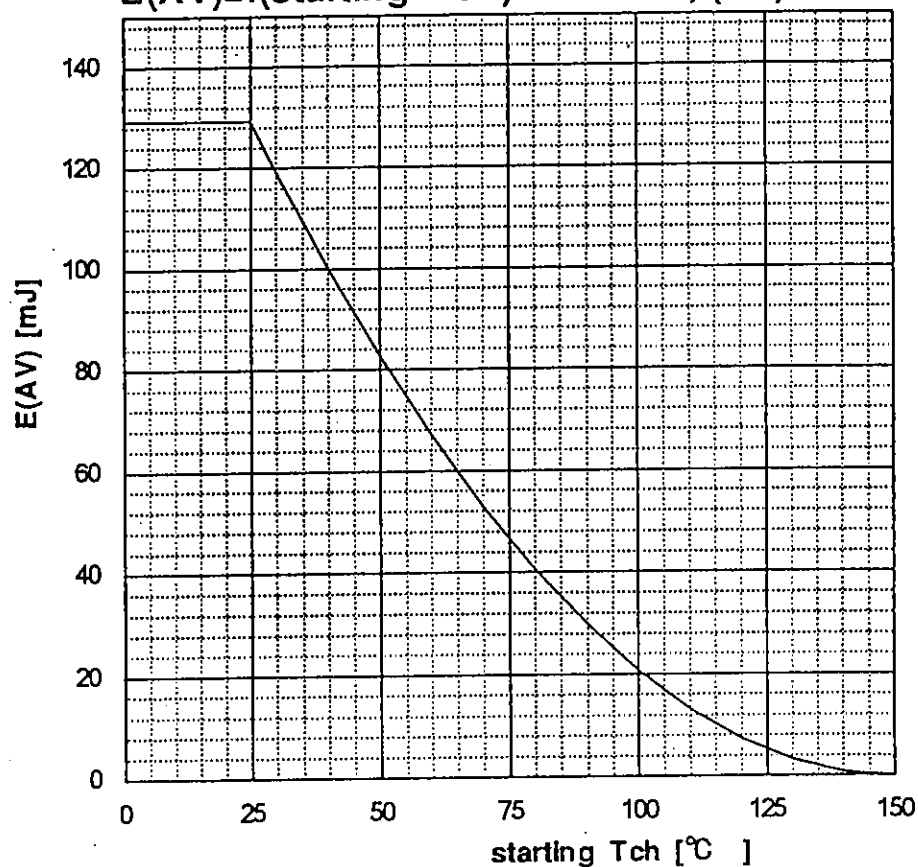
Typical Switching Characteristics vs. I_D $t = f(I_D)$: $V_{CC} = 15V$, $V_{GS} = 10V$, $R_G = 10\ \Omega$



Maximum Avalanche Current vs. starting Tch $I(AV)=f(\text{starting Tch})$



Maximum Avalanche Energy vs. starting Tch $E(AV)=f(\text{starting Tch}): V_{cc}=12V, I(AV) \leq 35A$



Transient Thermal Impedance $Z_{th}(ch-c)=f(t)$: parameter $D=t/T$

