2MI50F-050 SIPMOS® FUJI POWER MOS-FET

N-CHANNEL SILICON POWER MOS-FET

MOS-FET MODULE

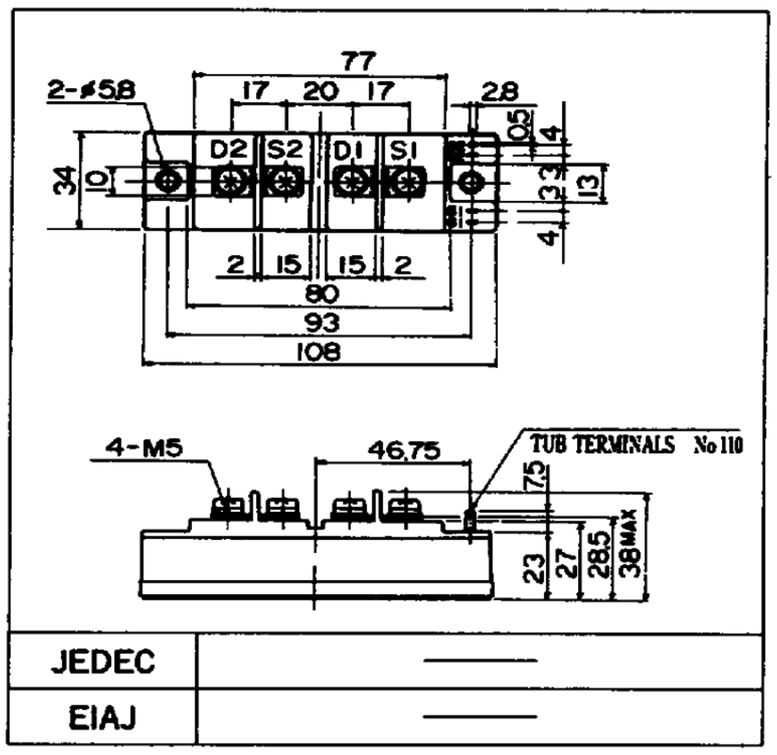
■Features

- Low on-resistance
- High current
- Insulated to elements and metal base
- Separated two-elements
- Include fast recovery diode

■Applications

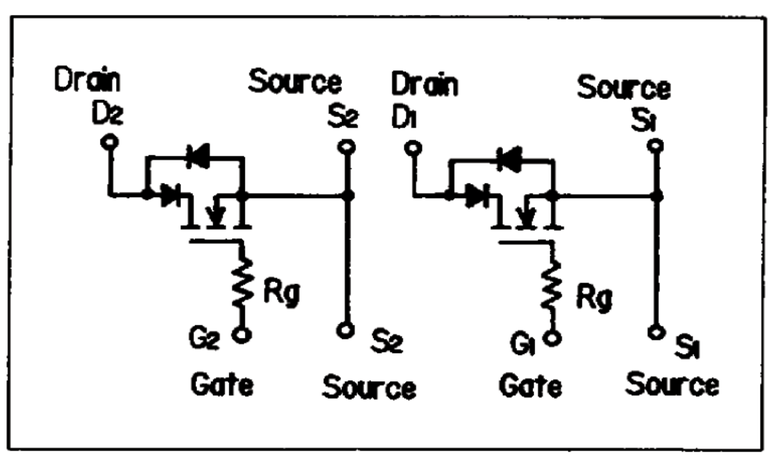
- Inverters
- UPS
- A. C servo motors
- High frequency power supplies

■Outline Drawings



JEDEC	———
EIAJ	———

■Equivalent Circuit Schematic



■Max. Ratings and Characteristics

●Absolute Maximum Ratings(Tc=25°C)

Items		Symbols	Ratings	Units
Drain-source voltage		V_{DSS}	500	V
Continuous drain current	Duty=66%	I_D	50	A
Pulsed drain current		$I_{D(puls)}$	150	A
Continuous reverse drain current		I_{DR}	50	A
Gate-source peak voltage		V_{GSS}	±20	V
Max. power dissipation		P_D	400	W
Operating and storage temperature range		T_{ch}	150	°C
		T_{stg}	−40～+125	°C
Isolation test voltage	AC 1min	V_{iso}	2500	V

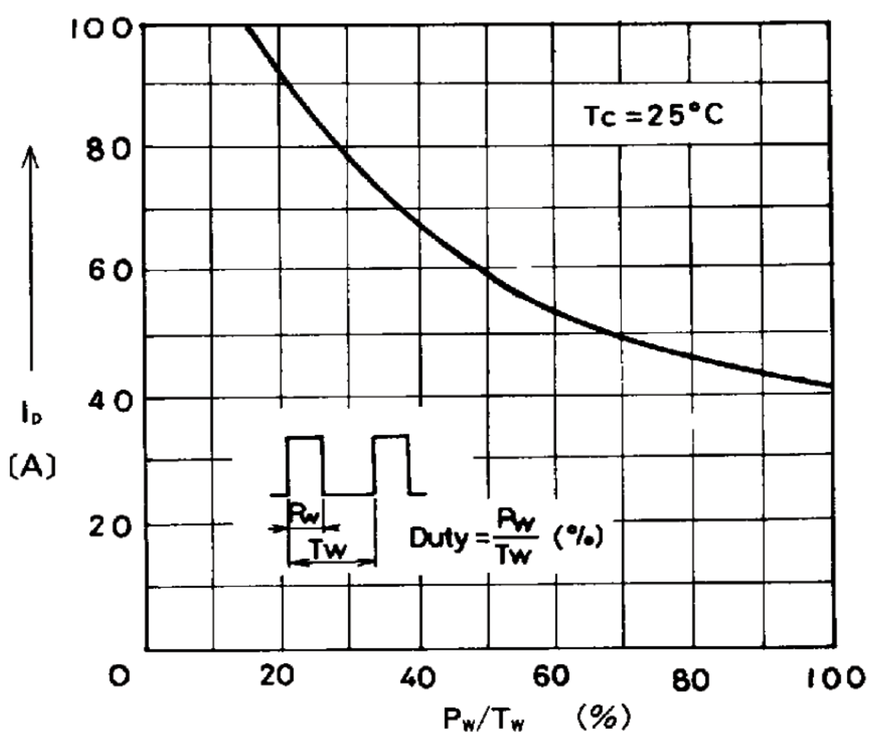
●Electrical Characteristics(Tc=25°C)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS}=0V I_D=1mA	500			V
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=10mA	2.1	3.0	4.0	V
Zero gate voltage drain current	I_{DSS}	V_{GS}=0V V_{DS}=500V T_{ch}=25°C			1.0	mA
Gate-source leakage current	I_{GSS}	V_{DS}=0V V_{GS}=±20V			100	nA
Drain-source on-state resistance	$R_{DS(on)}$	V_{GS}=15V I_D=25A			0.11	Ω
Forward transconductance	g_{fs}	V_{DS}=25V I_D=25A		45		S
Input capacitance	C_{iss}	V_{GS}=0V		7.8	13	nF
Output capacitance	C_{oss}	V_{DS}=25V		0.9	1.5	nF
Reverse transfer capacitance	C_{rss}	f =1MHz		0.4	0.6	nF
Switching time ($t_{off}=t_{d(off)}+t_f$)	t_{on}	V_{CC}=100V R_G=5Ω		530	750	ns
	$t_{d(off)}$	I_D=25A P_W=20μs		700	1000	ns
	t_f	V_{GS}=15V		80	110	ns
Diode foward on-voltage	V_{SD}	I_F=50A V_{GS}=0V		1.4	1.8	V
Reverse recovery time	t_{rr}	I_F=50, A−d_i/d_t=100A/μs V_{GS}=0V			150	ns

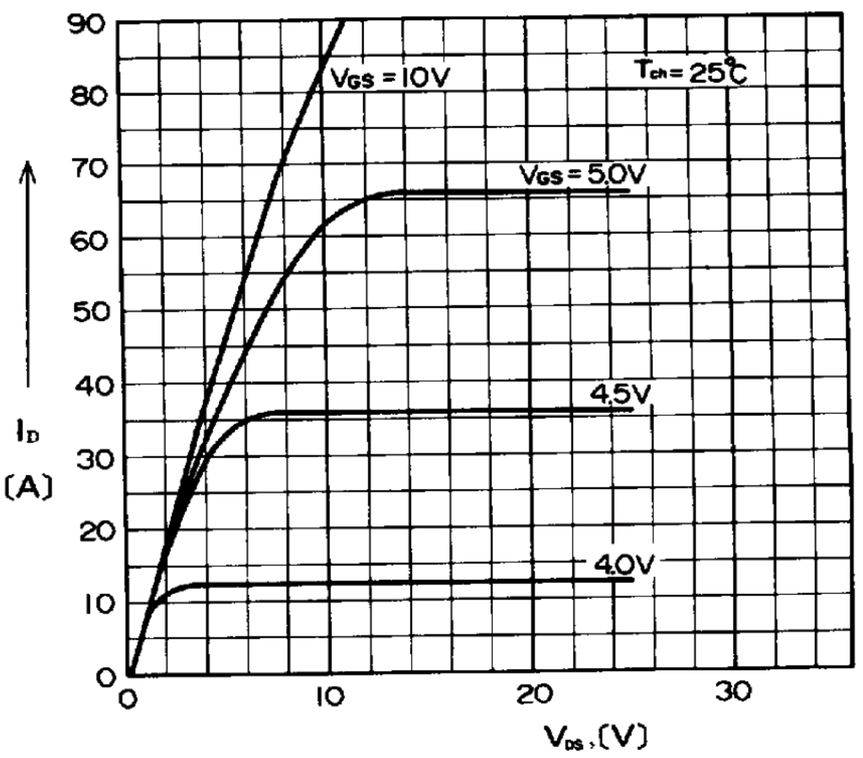
●Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(c-f)}$	case to fim		0.06		°C/W
	$R_{th(ch-c)}$	channel to case			0.312	°C/W

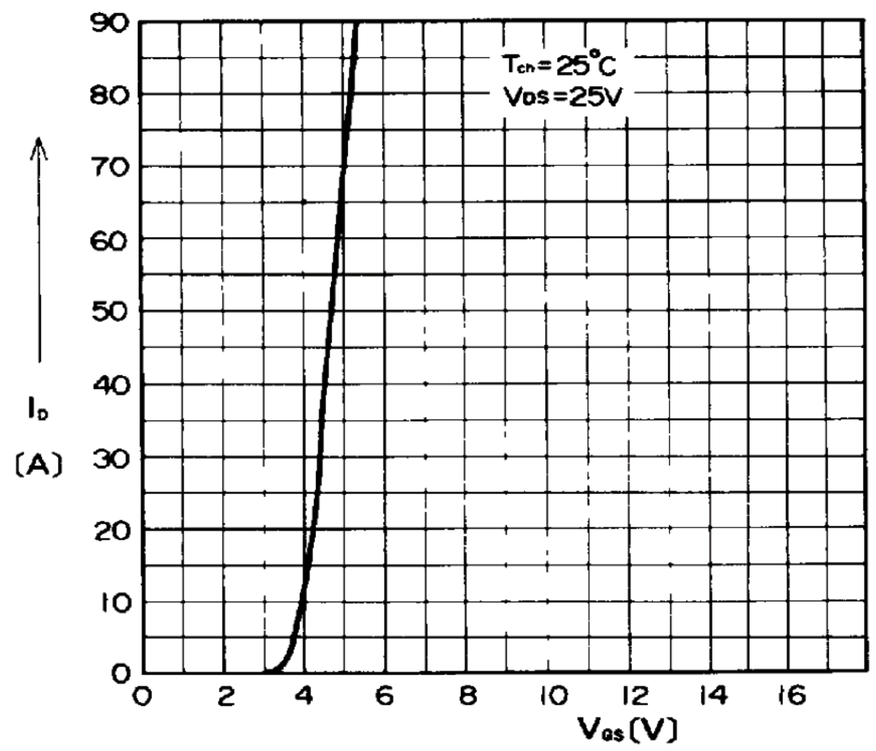
■Characteristics



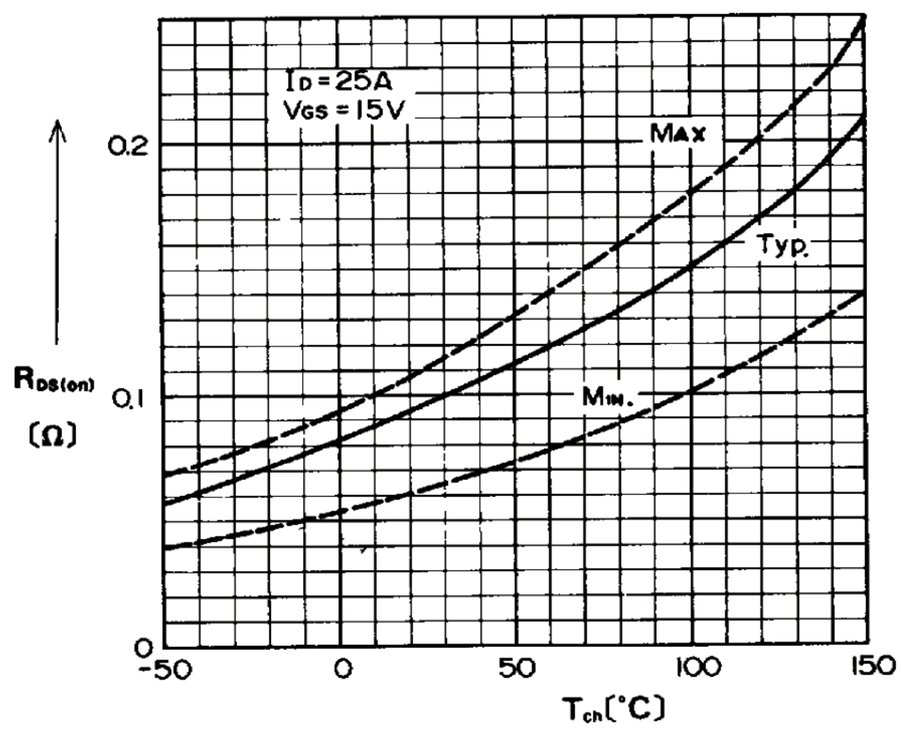
Current Duty Characteristics



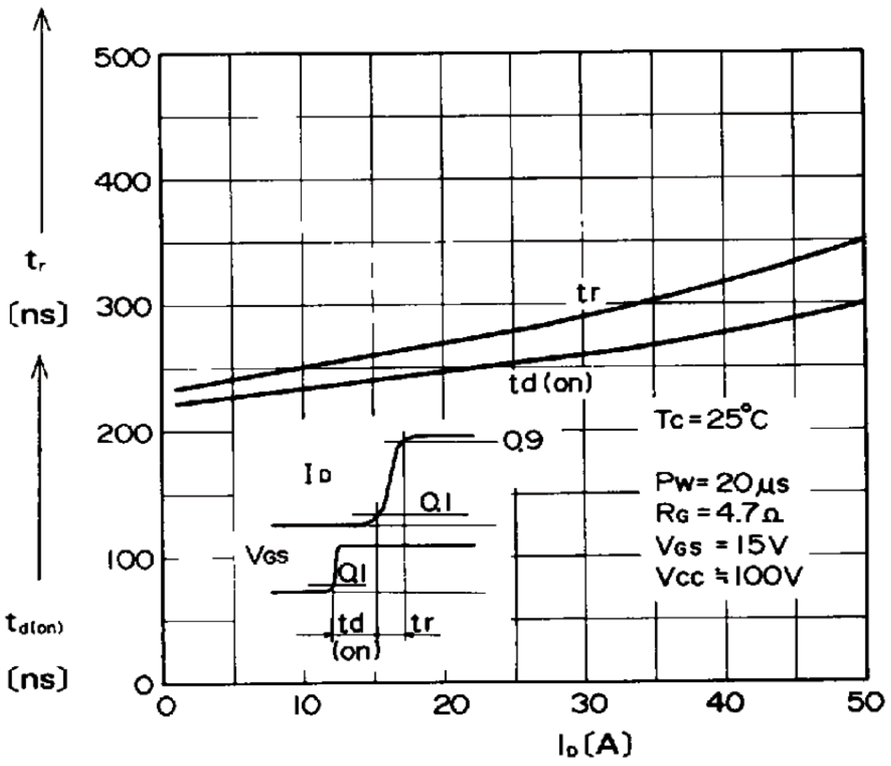
Typical Output Characteristics



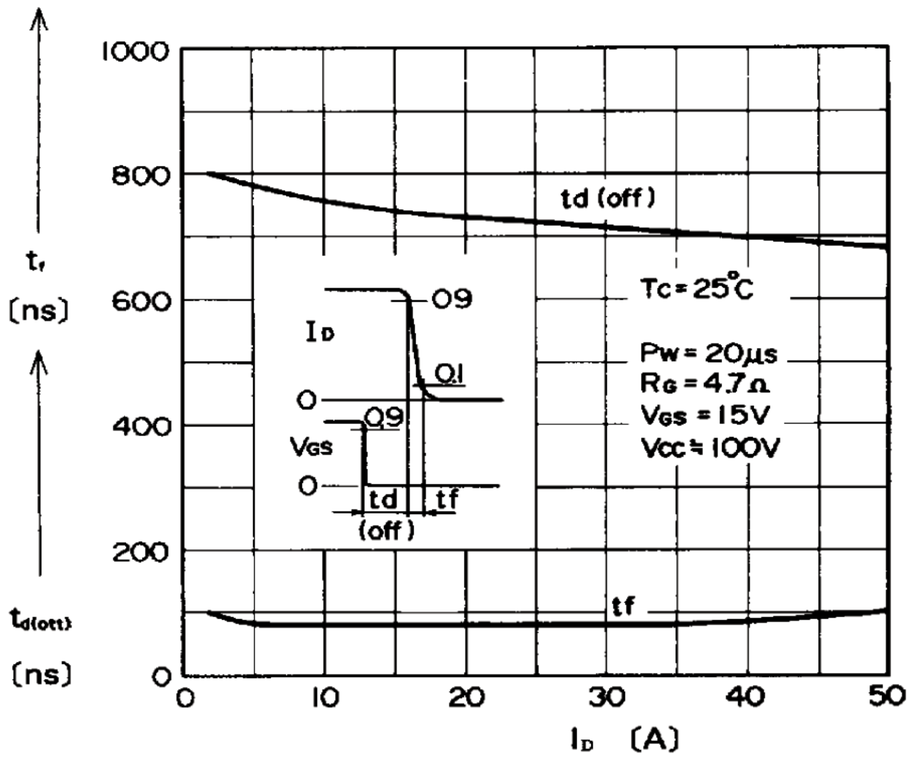
Typical Transfer Characteristics



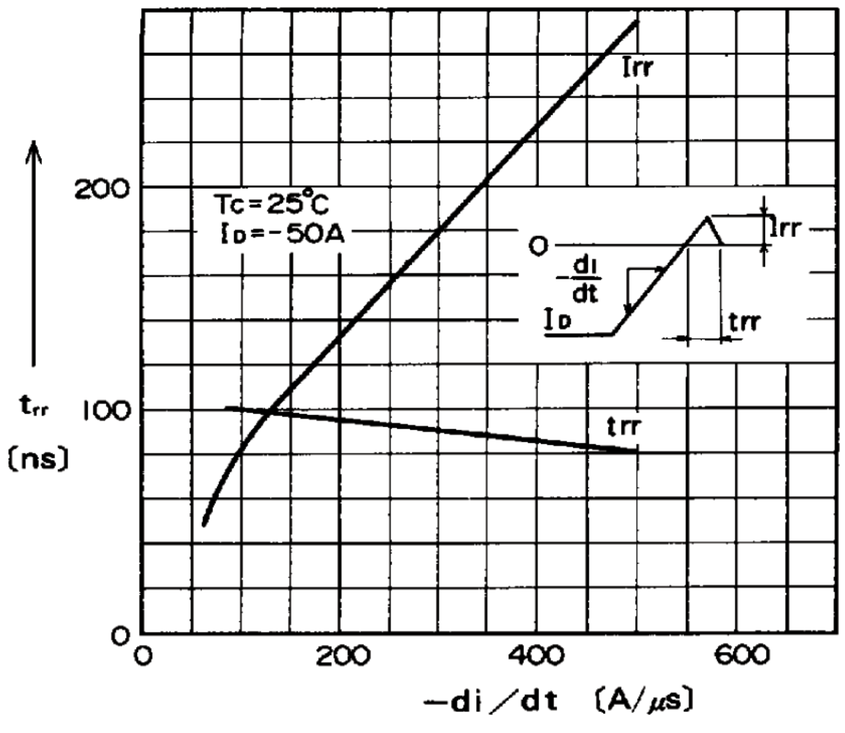
$R_{DS(on)}$–T_{ch} Characteristics



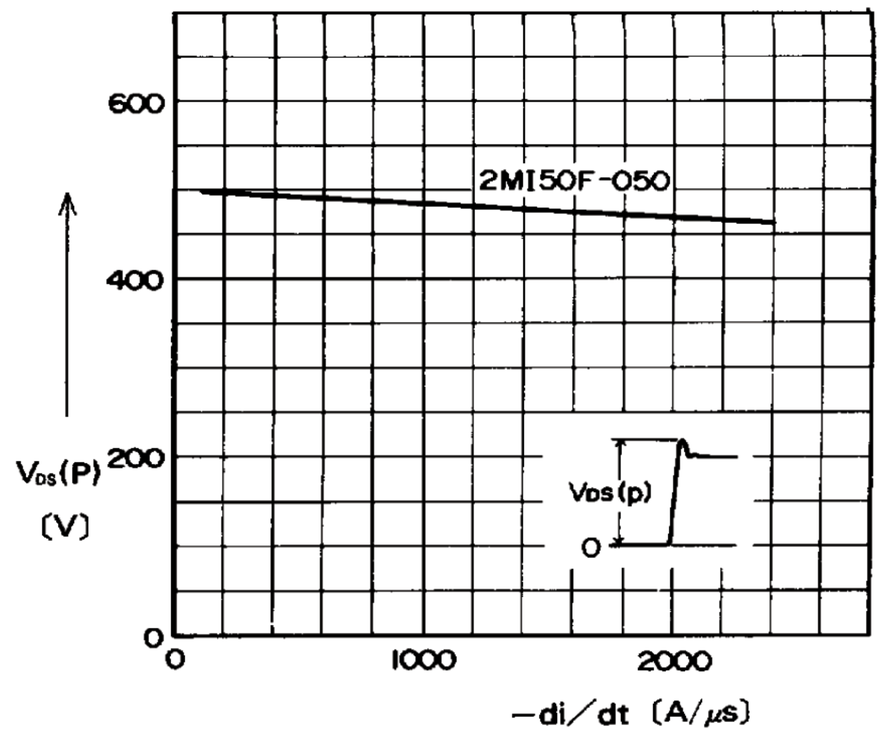
Turn-ON Characteristics



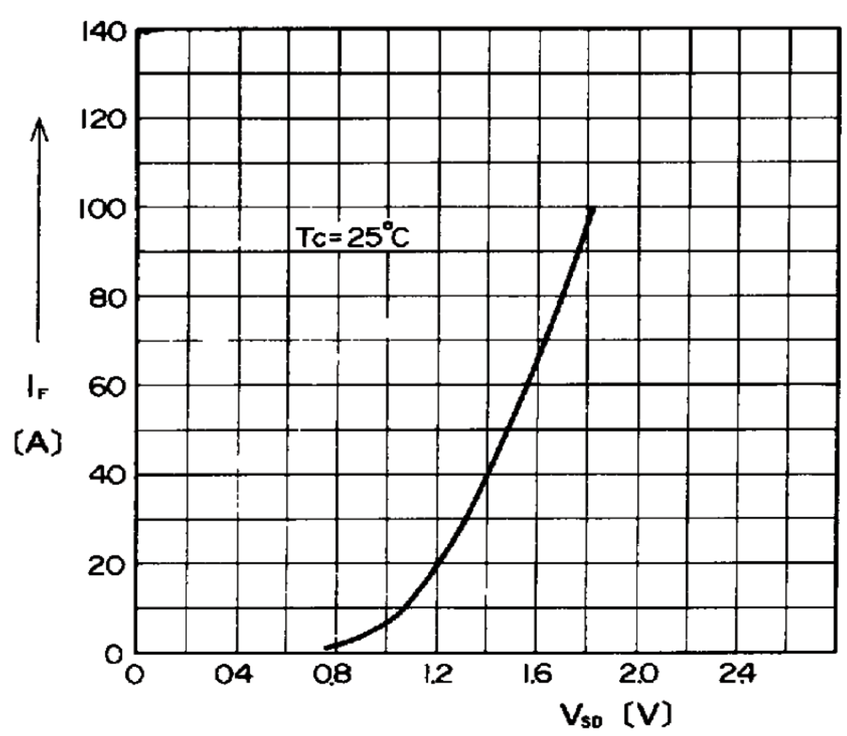
Turn-OFF Characteristics



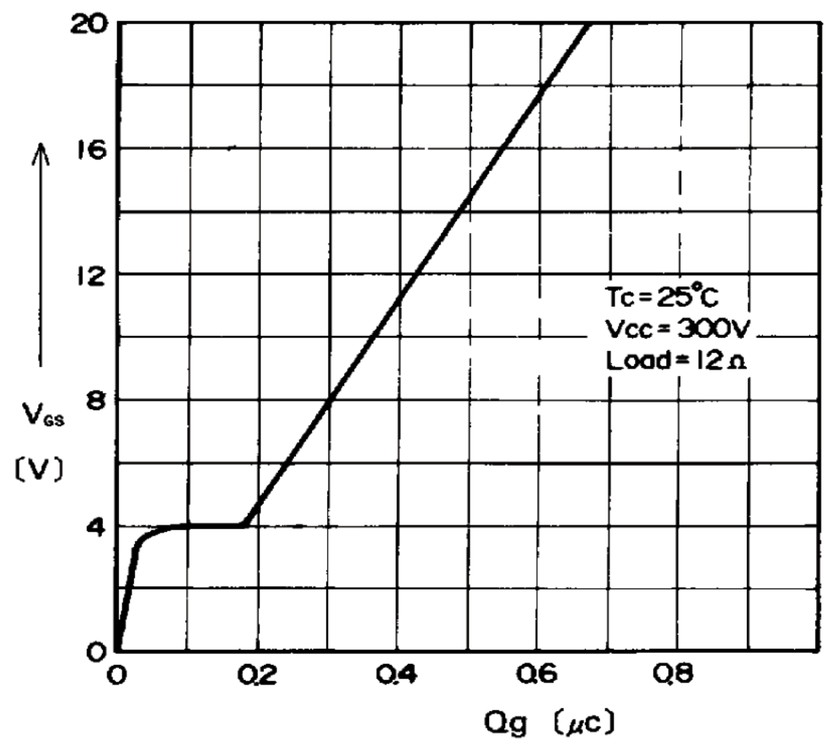
Reverse Recovery Characteristics



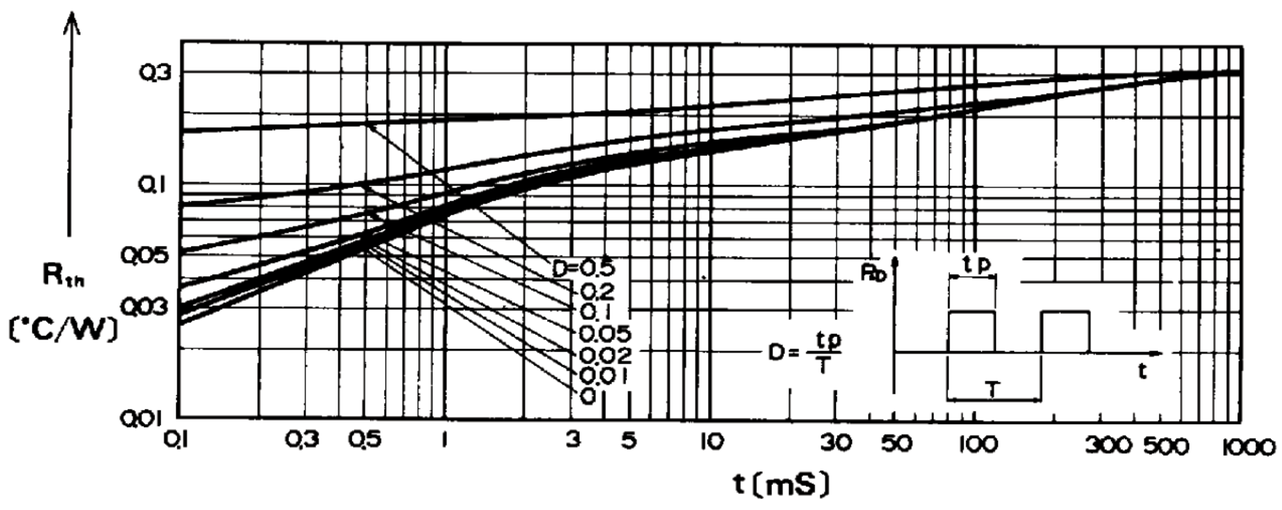
Max. Allowable di/dt at toff



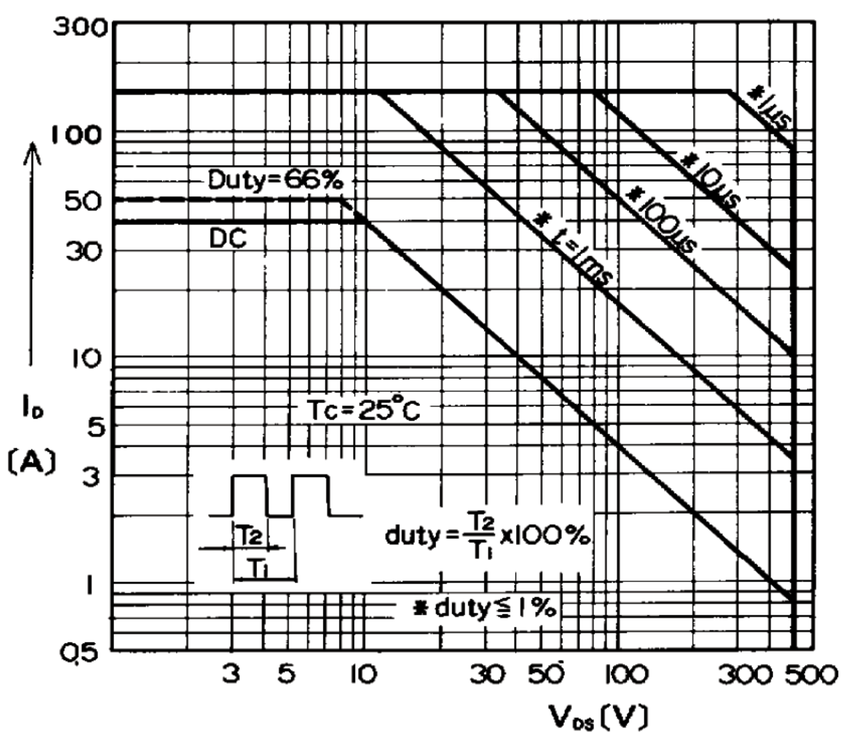
Foward Voltage of FWD



Typical Input Charge



Transient Thermal Impedance



Safe Operating Area