

■ Features

- High current
- Low on-resistance
- No secondary breakdown
- Low driving power
- High forward Transconductance

■ Applications

- Motor controllers
- General purpose power amplifier
- DC-DC converters

■ Max. Ratings and Characteristics

● Absolute Maximum Ratings(Tc=25°C)

Items	Symbols	Ratings	Units
Drain-source voltage	V_{DSS}	60	V
Continuous drain current	I_D	13	A
Pulsed drain current	$I_{D(puls)}$	52	A
Continuous reverse drain current	I_{DR}	13	A
Gate-source peak voltage	V_{GSS}	±20	V
Max. power dissipation	P_D	30	W
Operating and storage temperature range	T_{ch}	150	°C
	T_{stg}	-55 ~ +150	°C

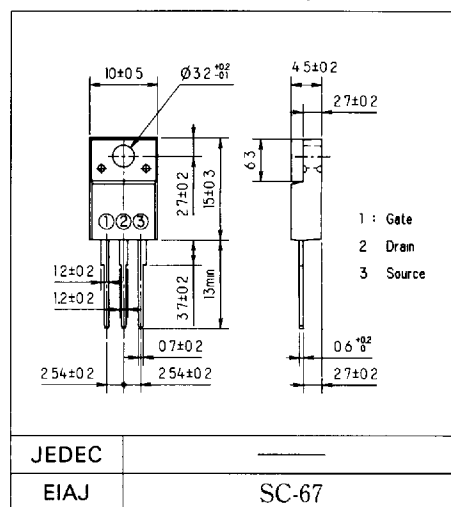
● Electrical Characteristics(Tc=25°C)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 1mA$ $V_{GS} = 0V$	60			V
Gate threshold voltage	$V_{GS(th)}$	$I_D = 1mA$ $V_{DS} = V_{GS}$	1.0	1.5	2.5	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V$		10	500	μA
		$V_{GS} = 0V$		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 20V$ $V_{DS} = 0V$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 7.0A$ $V_{GS} = 4V$		0.12	0.19	Ω
		$I_D = 7.0A$ $V_{GS} = 10V$		0.08	0.12	Ω
Forward transconductance	g_{fs}	$I_D = 7.0A$ $V_{DS} = 25V$	5	11		S
Input capacitance	C_{iss}	$V_{DS} = 25V$		500	750	pF
Output capacitance	C_{oss}	$V_{GS} = 0V$		200	300	
Reverse transfer capacitance	C_{rss}	$f = 1MHz$		60	90	
Turn-on time t_{on} ($t_{on} + t_{d(on)} + t_r$)	$t_{d(on)}$	$V_{CC} = 30V$ $I_D = 13A$ $V_{GS} = 10V$ $R_G = 25\Omega$		10	15	ns
	t_r			30	45	
Turn-off time t_{off} ($t_{d(off)} + t_f$)	$t_{d(off)}$			90	120	
	t_f			40	60	
Diode forward on-voltage	V_{SD}	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V$ $T_{ch} = 25^\circ C$		1.16	1.74	V
Reverse recovery time	t_{rr}	$I_F = I_{DR}$ $di/dt = 100A/\mu s$ $T_{ch} = 25^\circ C$		50		ns

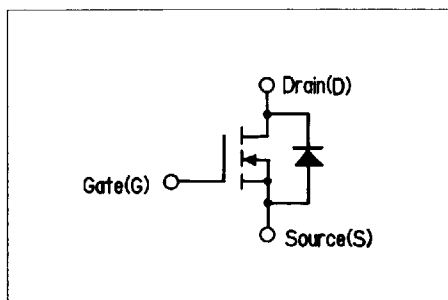
● Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	$R_{th(ch-a)}$	channel to air			62.5	°C/W
	$R_{th(ch-c)}$	channel to case			4.17	°C/W

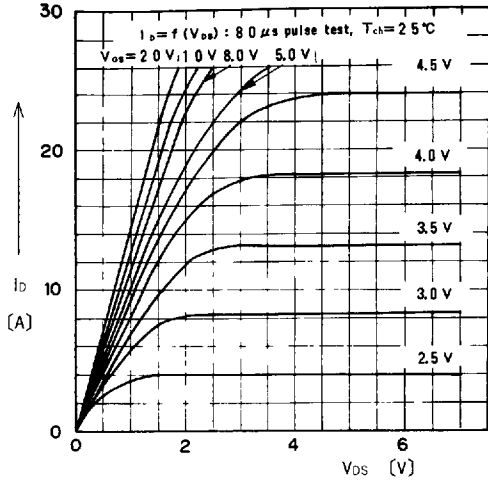
■ Outline Drawings



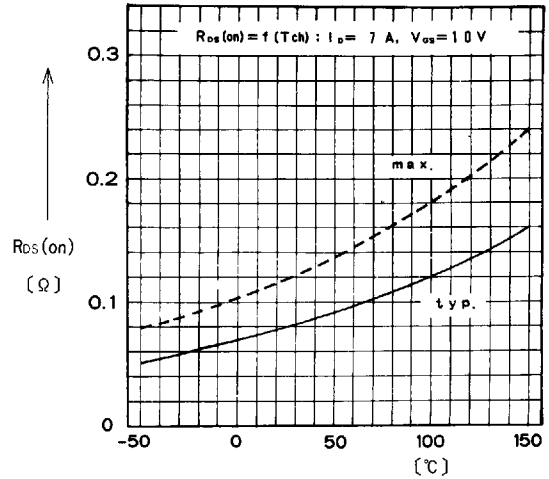
■ Equivalent Circuit Schematic



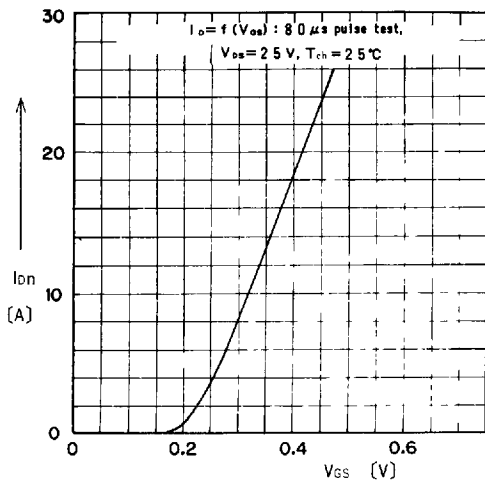
Characteristics



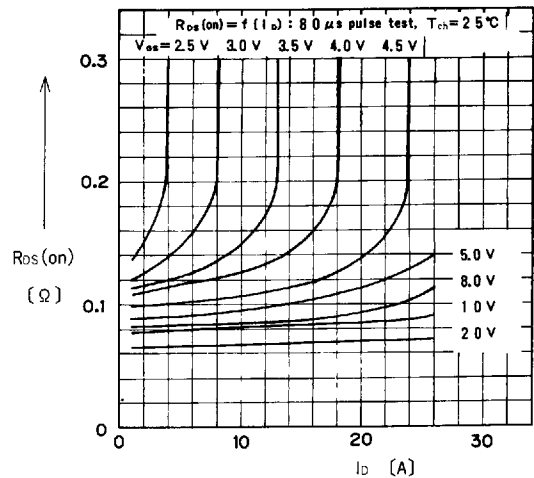
Typical Output Characteristics



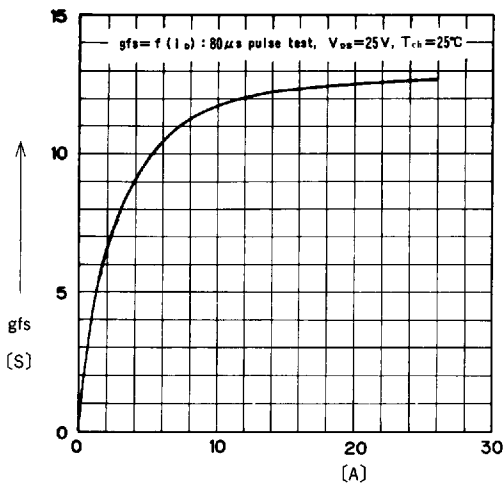
Drain-Source on State Resistance vs. Tch



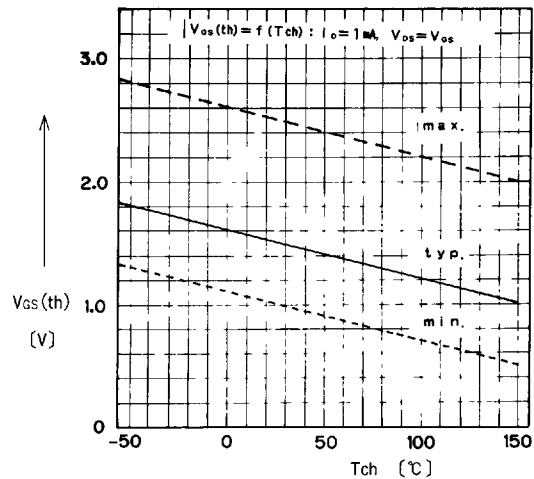
Typical Transfer Characteristic



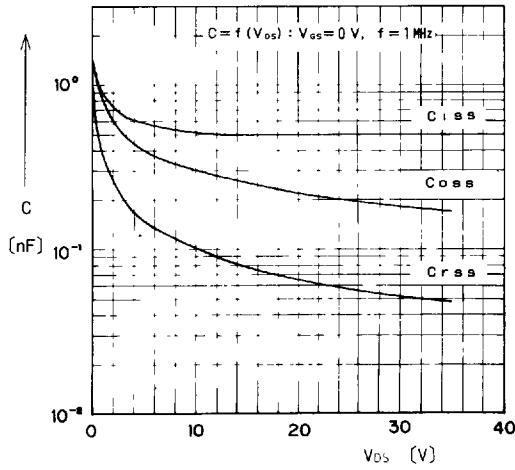
Typical Drain Source on State Resistance vs. I_D



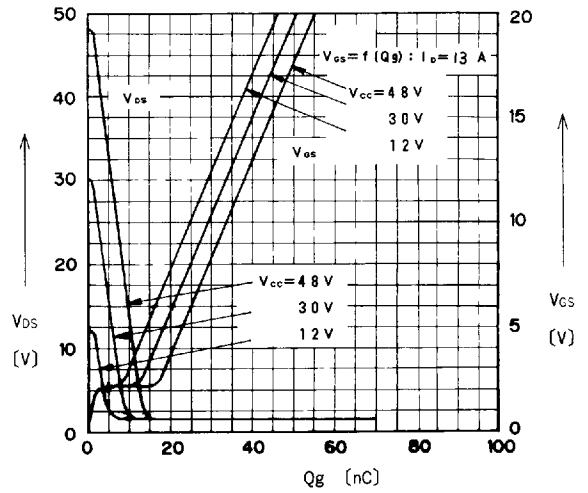
Typical Forward Transconductance vs. I_D



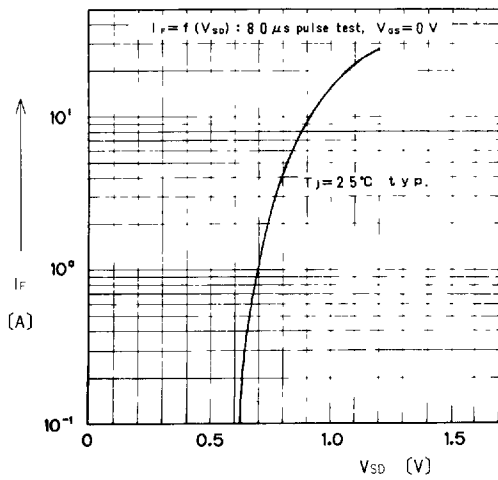
Gate Threshold Voltage vs. Tch



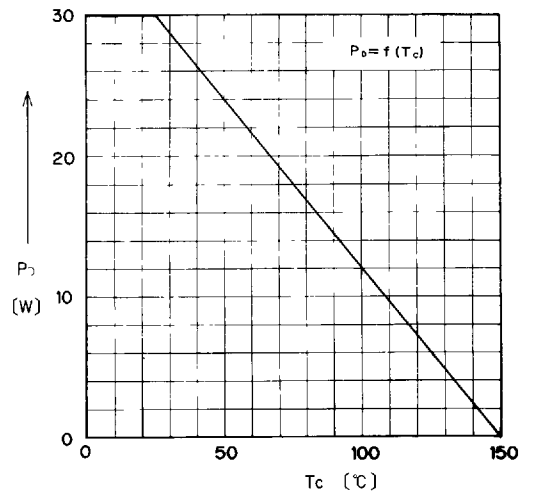
Typical Capacitance vs. V_{bs}



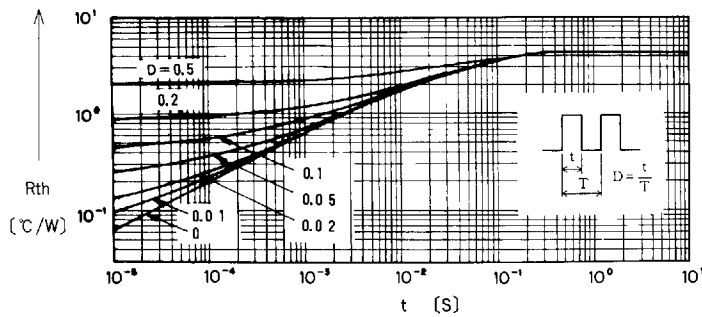
Dynamic Input Characteristics



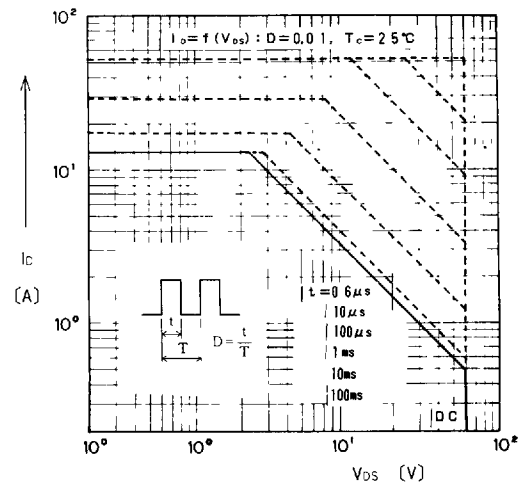
Forward Characteristics of Reverse Diode



Power vs. Temperature Derating



Transient Thermal Impedance



Safe Operating Area