

N-CHANNEL SILICON POWER MOS-FET

F-I SERIES

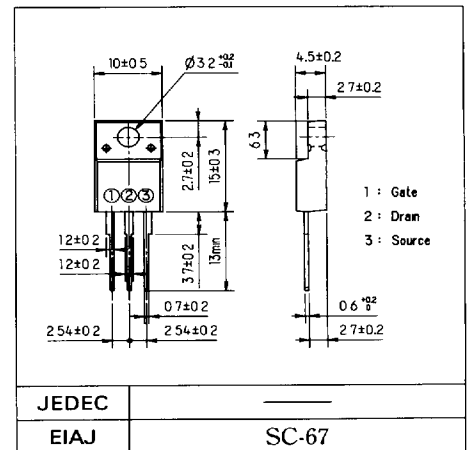
Features

- High speed switching
- Low on-resistance
- No secondary breakdown
- Low driving power
- High voltage

Applications

- Switching regulators
- UPS
- DC-DC converters
- General purpose power amplifier

Outline Drawings

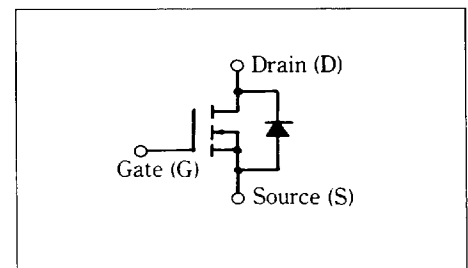


Max. Ratings and Characteristics

Absolute Maximum Ratings(T_c=25°C)

Items	Symbols	Ratings	Units
Drain-source voltage	V _{DS}	500	V
Continuous drain current	I _D	6	A
Pulsed drain current	I _{D(puls)}	24	A
Continuous reverse drain current	I _{DR}	6	A
Gate-source peak voltage	V _{GSS}	±20	V
Max. power dissipation	P _D	40	W
Operating and storage temperature range	T _{ch}	150	°C
	T _{stg}	-55 ~ +150	°C

Equivalent Circuit Schematic



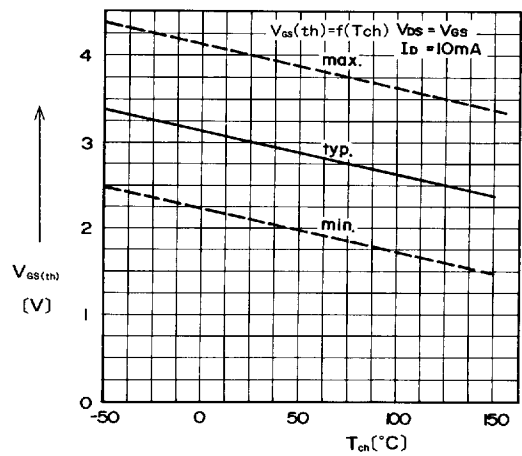
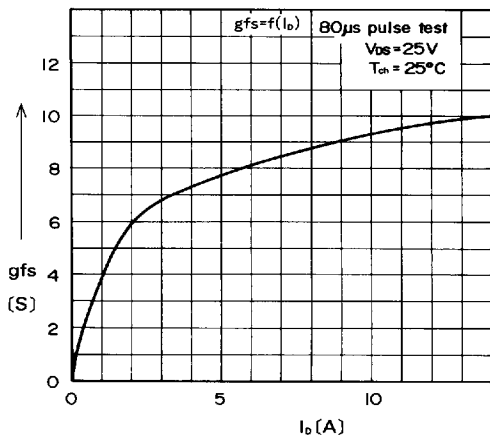
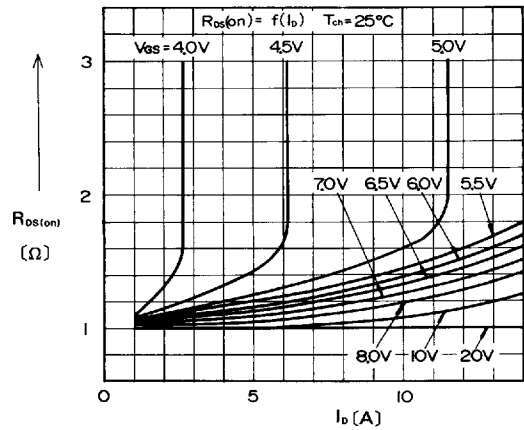
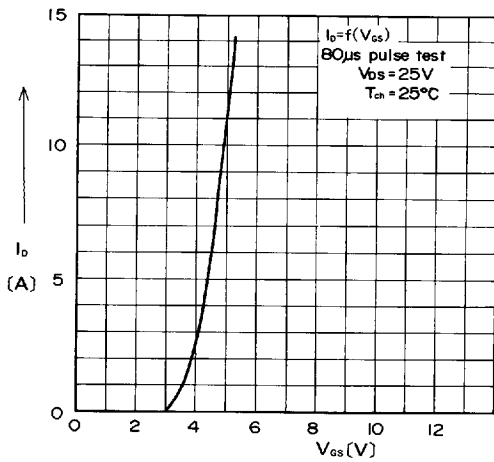
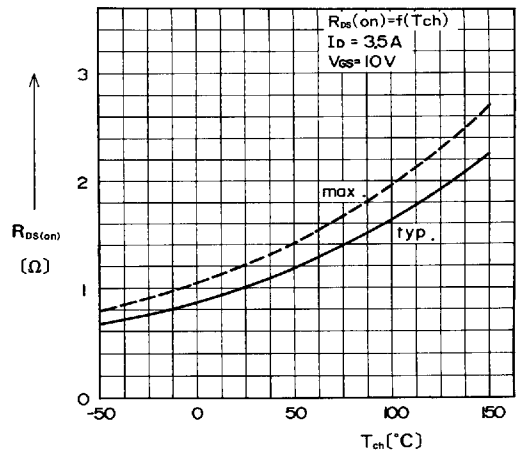
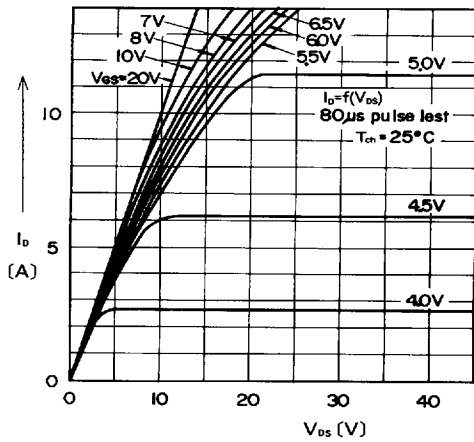
Electrical Characteristics(T_c=25°C)

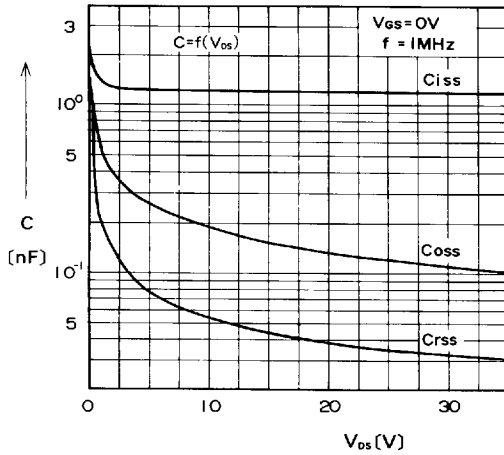
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	V _{(BR)DSS}	I _D = 1mA V _{GS} = 0V	500			V
Gate threshold voltage	V _{GS(th)}	I _D = 10mA V _{DS} = V _{GS}	2.1	3.0	4.0	V
Zero gate voltage drain current	I _{DSS}	V _{DS} = 500V		10	500	μA
		V _{GS} = 0V		0.2	1.0	mA
Gate-source leakage current	I _{GSS}	V _{GS} = ±20V V _{DS} = 0V		10	100	nA
Drain-source on-state resistance	R _{DS(on)}	I _D = 3.5A V _{GS} = 10V		1.0	1.2	Ω
Forward transconductance	g _{fs}	I _D = 3.5A V _{DS} = 25V	4.0	7.0		S
Input capacitance	C _{iss}	V _{DS} = 25V		1200	1800	pF
Output capacitance	C _{oss}	V _{GS} = 0V		120	180	
Reverse transfer capacitance	C _{rss}	f = 1MHz		35	55	
Turn-on time t _{on} (t _{on} + t _{d(on)} + t _r)	t _{d(on)}	V _{CC} = 30V I _D = 2.7A		25	40	ns
	t _r			40	70	
Turn-off time t _{off} (t _{d(off)} + t _f)	t _{d(off)}	V _{GS} = 10V R _G = 50Ω		200	300	
	t _f			60	100	
Diode forward on-voltage	V _{SD}	I _F = 2 × I _{DR} V _{GS} = 0V T _{ch} = 25°C		1.0	1.5	V
Reverse recovery time	t _{rr}	I _F = I _{DR} d _i /d _t = 100A/μS T _{ch} = 25°C		300		ns

Thermal Characteristics

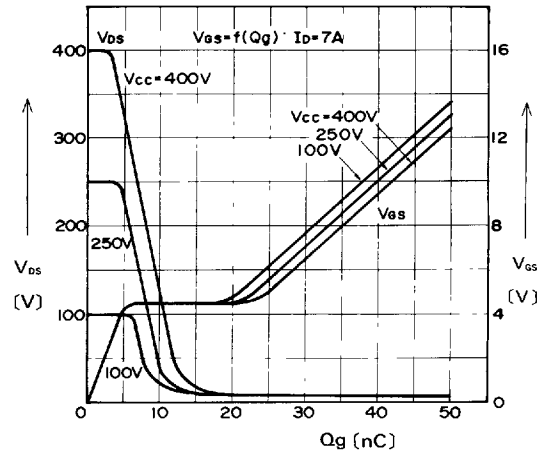
Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal Resistance	R _{th(ch-a)}	channel to air			62.5	°C/W
	R _{th(ch-c)}	channel to case			3.125	°C/W

■ Characteristics

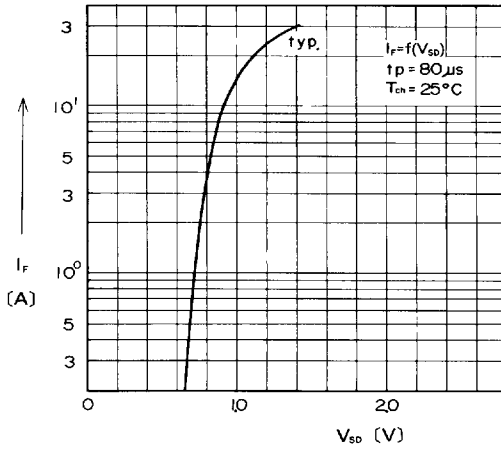




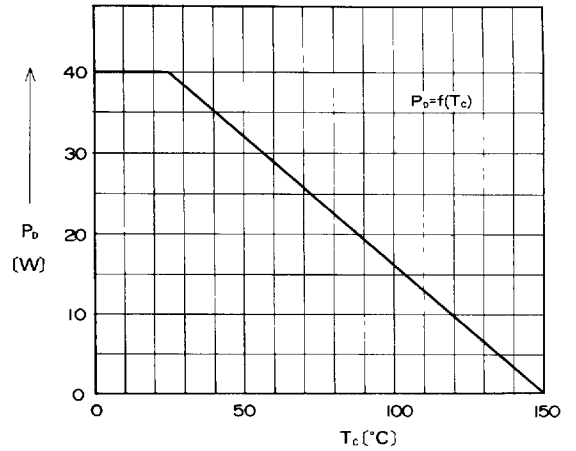
Typical Capacitance vs. V_{DS}



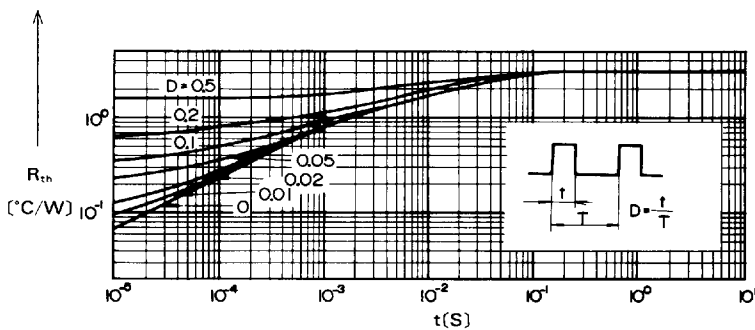
Typical Input Charge



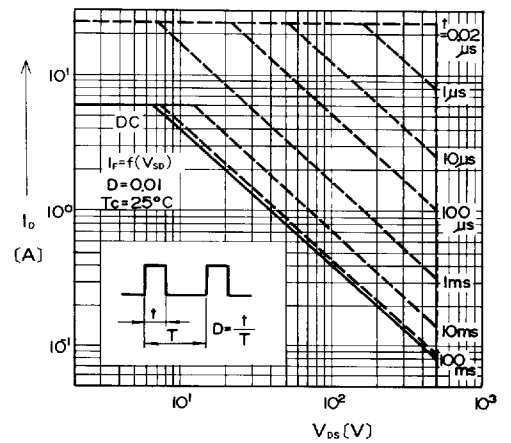
Forward Characteristic of Reverse Diode



Allowable Power Dissipation vs. T_c



Transient Thermal Impedance



Safe Operating Area