

N-CHANNEL ENHANCEMENT TYPE MOS-FET

F-V SERIES

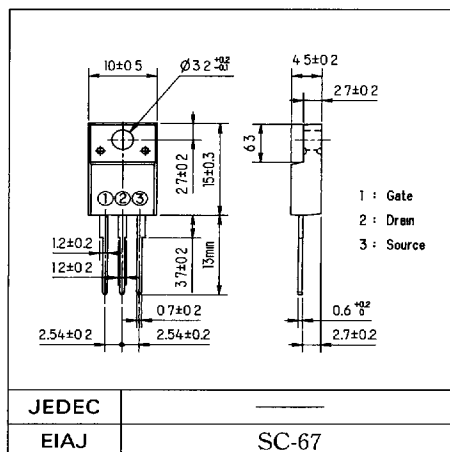
■ Features

- Include fast recovery diode
- High voltage
- Low driving power

■ Applications

- Motor controllers
- Inverters
- Choppers

■ Outline Drawings

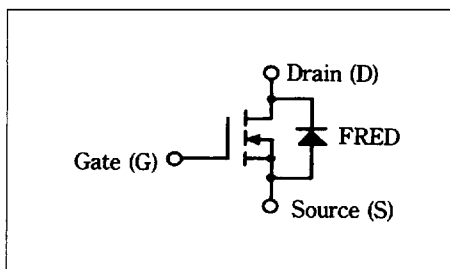


■ Max. Ratings and Characteristics

●Absolute Maximum Ratings(Tc=25°C)

Items	Symbols	Ratings	Units
Drain-source voltage	V_{DS}	250	V
Continuous drain current	I_D	20	A
Pulsed drain current	$I_{D(puls)}$	80	A
Continuous reverse drain current	I_{DR}	20	A
Gate-source peak voltage	V_{GSS}	± 20	V
Max. power dissipation	P_D	50	W
Operating and storage temperature range	T_{ch}	150	$^{\circ}\text{C}$
	T_{stg}	$-55 \sim +150$	$^{\circ}\text{C}$

■ Equivalent Circuit Schematic



●Electrical Characteristics($T_c=25^{\circ}\text{C}$)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 1mA$ $V_{GS} = 0V$	250			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}	$V_{DS} = 250V$ $V_{GS} = 0V$ $T_{ch} = 25^{\circ}C$		10	500	μA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 20V$ $V_{DS} = 0V$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 10A$ $V_{GS} = 10V$		0.16	0.25	Ω
Forward transconductance	g_{fs}	$I_D = 10A$ $V_{DS} = 25V$	6	12		S
Input capacitance	C_{iss}	$V_{DS} = 25V$		1100	1600	pF
Output capacitance	C_{oss}	$V_{GS} = 0V$		240	360	
Reverse transfer capacitance	C_{rss}	$f = 1MHz$		130	200	
Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$	$V_{CC} = 150V$ $R_G = 25\Omega$ $I_D = 20A$ $V_{GS} = 10V$		30	45	ns
	t_r			50	80	
Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$			200	300	
	t_f			100	150	
Diode forward on-voltage	V_{SD}	$I_F = I_{DR}$ $V_{GS} = 0V$ $T_{ch} = 25^{\circ}C$		0.95	1.8	V
Reverse recovery time	t_{rr}	$I_F = I_{DR}$ $d_i/d_r = 100A/\mu s$ $T_{ch} = 25^{\circ}C$		100	150	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			2.78	°C/W