

N-CHANNEL SILICON POWER MOS-FET

F-III SERIES

Features

- High current
- Low on-resistance
- 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_{DS}	120	V
Continuous drain current	I_D	50	A
Pulsed drain current	$I_{D(puls)}$	200	A
Continuous reverse drain current	I_{DR}	50	A
Gate-source peak voltage	V_{GSS}	± 20	V
Max. power dissipation	P_D	150	W
Operating and storage temperature range	T_{ch}	150	°C
	T_{sig}	-55 ~ +150	°C

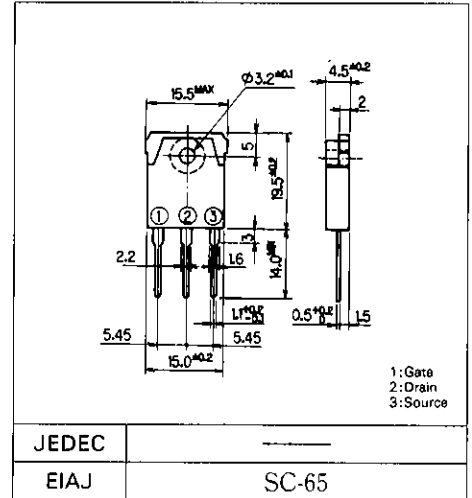
Electrical Characteristics(Tc=25°C)

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units	
Drain-source breakdown voltage	$V_{(BR)DSS}$	$I_D = 1mA$ $V_{GS} = 0V$	120			V	
Gate threshold voltage	$V_{GS(th)}$	$I_D = 10mA$ $V_{DS} = V_{GS}$	1.0	1.5	2.5	V	
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 120V$ $V_{GS} = 0V$	$T_{ch} = 25^\circ C$		10	500	μA
			$T_{ch} = 125^\circ C$		0.2	1.0	mA
Gate-source leakage current	I_{GSS}	$V_{GS} = \pm 20V$ $V_{DS} = 0V$		10	100	nA	
Drain-source on-state resistance	$R_{DS(on)}$	$I_D = 25A$ $V_{GS} = 4V$		25	45	m Ω	
		$I_D = 25A$ $V_{GS} = 10V$		20	30	m Ω	
Forward transconductance	g_{fs}	$I_D = 25A$ $V_{DS} = 25V$	25	50		S	
Input capacitance	C_{iss}	$V_{DS} = 25V$		5000	7500	pF	
Output capacitance	C_{oss}	$V_{GS} = 0V$		920	1380		
Reverse transfer capacitance	C_{rss}	$f = 1MHz$		500	750		
Turn-on time t_{on} ($t_{on} = t_{d(on)} + t_r$)	$t_{d(on)}$ t_r	$V_{CC} = 60V$ $I_D = 50A$ $V_{GS} = 10V$ $R_G = 25\Omega$		30	45	ns	
				200	300		
Turn-off time t_{off} ($t_{off} = t_{d(off)} + t_f$)	$t_{d(off)}$ t_f			950	1425		
				400	600		
Diode forward on-voltage	V_{SD}	$I_F = 2 \times I_{DR}$ $V_{GS} = 0V$ $T_{ch} = 25^\circ C$	1.33	2.0	V		
Reverse recovery time	t_{rr}	$I_F = I_{DR}$ $dI/dt = 100A/\mu s$ $T_{ch} = 25^\circ C$	150		ns		

Thermal Characteristics

Items	Symbols	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-a)}$	channel to air			35.0	°C/W
	$R_{th(ch-c)}$	channel to case			0.833	°C/W

Outline Drawings



Equivalent Circuit Schematic

