

FAP-III B Series

N-CHANNEL SILICON POWER MOSFET

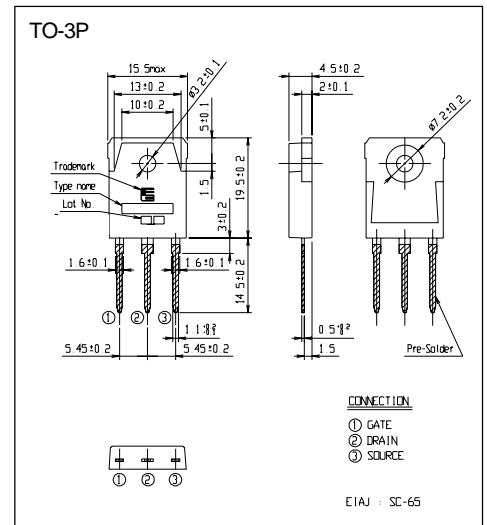
Features

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

Applications

- Switching regulators
- UPS (Uninterruptible Power Supply)
- DC-DC converters

Outline Drawings [mm]



Maximum ratings and characteristic Absolute maximum ratings

($T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Ratings	Unit
Drain-source voltage	V_{DS}	60	V
Continuous drain current	I_D	± 80	A
Pulsed drain current	I_{Dp}	± 320	A
Gate-source voltage	V_{GS}	± 20	V
Maximum avalanche energy	E_{AV} *1	599	mJ
Maximum power dissipation	P_D	125	W
Operating and storage	T_{ch}	+150	$^\circ\text{C}$
Temperature range	T_{stg}	-55 to +150	$^\circ\text{C}$

*1 $L=0.125\text{mH}$, $V_{CC}=24\text{V}$

Electrical characteristics ($T_c=25^\circ\text{C}$ unless otherwise specified)

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Drain-source breakdown voltage	BV_{DSS}	$I_D=1\text{mA}$ $V_{GS}=0\text{V}$	60			V
Gate threshold voltage	$V_{GS(th)}$	$I_D=1\text{mA}$ $V_{DS}=V_{GS}$	1.0	1.5	2.0	V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=60\text{V}$ $V_{GS}=0\text{V}$	$T_{ch}=25^\circ\text{C}$	10	500	μA
			$T_{ch}=125^\circ\text{C}$		0.2	1.0
Gate-source leakage current	I_{GSS}	$V_{GS}=\pm 20\text{V}$ $V_{DS}=0\text{V}$		10	100	nA
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=40\text{A}$	$V_{GS}=4\text{V}$	12	17	m Ω
			$V_{GS}=10\text{V}$		7.5	10
Forward transconductance	g_{fs}	$I_D=40\text{A}$ $V_{DS}=25\text{V}$	25.0	55.0		S
Input capacitance	C_{iss}	$V_{DS}=25\text{V}$		3500	5250	pF
Output capacitance	C_{oss}	$V_{GS}=0\text{V}$		1250	1870	
Reverse transfer capacitance	C_{rss}	$f=1\text{MHz}$		360	540	
Turn-on time t_{on}	$t_{d(on)}$	$V_{CC}=30\text{V}$ $I_D=75\text{A}$ $V_{GS}=10\text{V}$ $R_{GS}=10\Omega$		15	23	ns
	t_r			75	120	
	$t_d(off)$			190	285	
Turn-off time t_{off}	t_r			110	165	
Avalanche capability	I_{AV}	$L=100\mu\text{H}$ $T_{ch}=25^\circ\text{C}$	80			A
Diode forward on-voltage	V_{SD}	$I_F=160\text{A}$ $V_{GS}=0\text{V}$ $T_{ch}=25^\circ\text{C}$		1.15	1.65	V
Reverse recovery time	t_{rr}	$I_F=80\text{A}$ $V_{GS}=0\text{V}$		75	120	ns
Reverse recovery charge	Q_{rr}	$-di/dt=100\text{A}/\mu\text{s}$ $T_{ch}=25^\circ\text{C}$		0.17		μC

Thermal characteristics

Item	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Thermal resistance	$R_{th(ch-c)}$	channel to case			1.00	$^\circ\text{C}/\text{W}$
	$R_{th(ch-a)}$	channel to ambient			35.0	$^\circ\text{C}/\text{W}$

Characteristics

