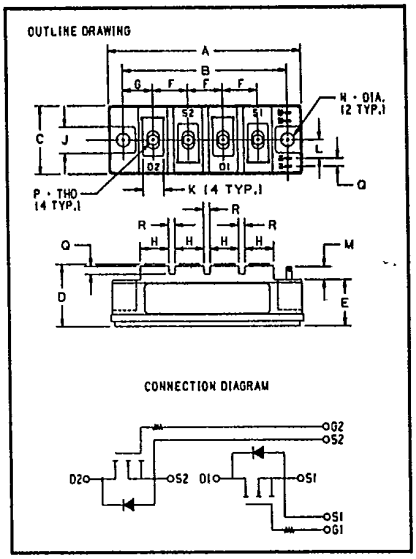
POWEREX

JT224503
JT225003 Tentative

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

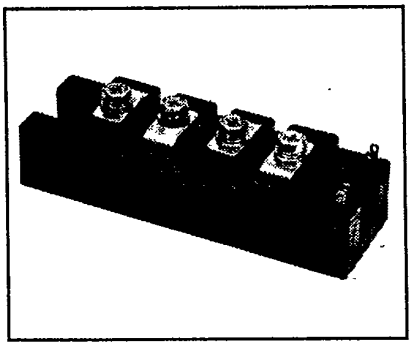
Split-Dual FETMOD™ Power Modules

30 Amperes/450-500 Volts



450-500 Volts JT224503, JT225003 Outline Drawing

Dimension	Inches	Millimeters
A	3.701	94
B	3.150 ± .010	80 ± 0.25
C	1.338	34
D	1.220 Max.	31 Max.
E	.906	23
F	.669	17
G	.572	14.5
H	.551	14
J	.512	13
K	.394	10
L	.344	8.75
M	.256 Min.	6.5 Min.
N	.256 Dia.	6.5 Dia.
P	M5 Metric	M5
Q	.157	4
R	.118	3



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Description
Powerex Split-Dual FETMOD™ Modules are designed for use in applications requiring high-frequency switching and low loss control. The modules are isolated, consisting of two MOSFETs with internal series gate resistors and independent connections.

Features:
- ☐ Isolated Mounting
- ☐ Vertical DMOS Chips
- ☐ High Speed Body Diode
- ☐ Low Drive Requirement
- ☐ Low $R_{DS(on)}$
- ☐ Internal Series Gate Resistors
- ☐ Fast Switching

Applications:
- ☐ Choppers
- ☐ UPS Inverters
- ☐ Switch Mode Power Supply
- ☐ PWM Regulators
- ☐ Welding Power Supply

Ordering Information
Example: Select the complete eight digit module part number you desire from the table - i.e. JT225003 is a 500 Volt, 30 Ampere Split-Dual FETMOD™ Module.

Type	V_{DSS} Volts (x10)	Current Rating Amperes (x10)
JT22	45	03
JT22	50	03

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Maximum Ratings T_J = 25°C unless otherwise specified

	Symbol	JT224503/JT225003	Units
Junction Temperature	T_J	−40 to 150	°C
Storage Temperature	T_{STG}	−40 to 125	°C
Drain Source Voltage	V_{DSS}	450/500	Volts
Gate-Source Voltage	V_{GSS}	±20	Volts
Continuous Drain Current	I_D	25	Amperes
Continuous Source Current	I_S	25	Amperes
Pulsed Drain Current Repetitive	I_{DM}	90	Amperes
Power Dissipation	P_T	250	Watts
Max. Mounting Torque (M5) Terminal Screws	—	17	in.-lb.
Max. Mounting Torque (M6) Mounting Screws	—	26	in.-lb.
Module Weight	—	250	Grams
V isolation	V_{RMS}	2500	Volts

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Static Electrical Characteristics T_J=25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	JT224503/JT225003 Min.	Typ.	Max.	Units
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=V_{DSS}$, $V_{GS}=0V$	—	—	1	mA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=0.8\ V_{DSS}$, $V_{GS}=0V$ $T_J=150°C$	—	—	10	mA
Gate Source Threshold	$V_{GS(th)}$	$I_D=1$ mA, $V_{DS}=10V$	2	3	4	Volts
Gate Source Leakage	$\pm I_{GSS}$	$\pm V_{GS}=\pm 20V$, $V_{DS}=0V$	—	—	0.5	μA
Drain Source On State Resistance*	$R_{DS(on)}$	$V_{GS}=15V$, $I_D=30A$	—	—	0.2	Ω
		$V_{GS}=15V$, $I_D=30A$, $T_J=150°C$	—	—	0.4	Ω
Drain Source On State Voltage*	$V_{DS(on)}$	$V_{GS}=15V$, $I_D=30A$	—	—	6	Volts
		$V_{GS}=15V$, $I_D=30A$, $T_J=150°C$	—	—	12	Volts
Thermal Resistance, Case to Sink Lubricated	$R_{\theta CS}$	—	—	—	0.15	°C/W
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per Device	—	—	0.5	°C/W

* Pulse Test: Pulse width ≤ 10μs

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Source-Drain Diode Characteristics T_J = 25°C unless otherwise specified

Characteristics	Symbol	Test Conditions	JT224503,/JT225003 Min.	Typ.	Max.	Units
Source-Drain Voltage	V_{SD}	I_S = 30A, V_{GS} = 0V	—	—	2.5	Volts
Reverse Recovery Time	t_{rr}	I_S = 30A, dIs/dt = 60A/μs, V_{GS} = 0V	—	160	200	ns

Dynamic Electrical Characteristics T_J = 25°C unless otherwise specified

Dynamic Electrical Characteristics		Test Conditions	JT224503/JT225003 Min.	Typ.	Max.	Units
Forward Transconductance	g_{fs}	I_D = 15A, V_{DS} = 10V, $t_w \leq 300\mu s$, Duty = 2%	10	—	—	mhos
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 10V, f = 1 Mhz	—	—	7000	pf
Output Capacitance	C_{oss}		—	—	2000	pf
Reverse Transfer Capacitance	C_{rss}		—	—	800	pf
Total Gate Charge	Q_G	V_{DD} = 0.8 V_{DSS}, V_{GS} = 10V, I_D = 30A	—	360	—	nC
Turn On Time**	t_{on}	V_{DD} = 0.5 V_{DSS}, I_D = 15A, V_{GS} = 15V, R_{GEN} = R_{GS} = 50Ω	—	—	500	ns
Turn Off Time**	t_{off}		—	—	1100	ns

** Turn on Time (t_{on}) = Turn on Delay ($t_{d(on)}$) + Rise Time (t_r)
Turn-off Time (t_{off}) = Turn off Delay ($t_{d(off)}$) + Fall Time (t_f)

This specification is tentative; therefore, performance curves are not included. Please contact the Powerex sales representative nearest you for further information.