

POWEREX INC

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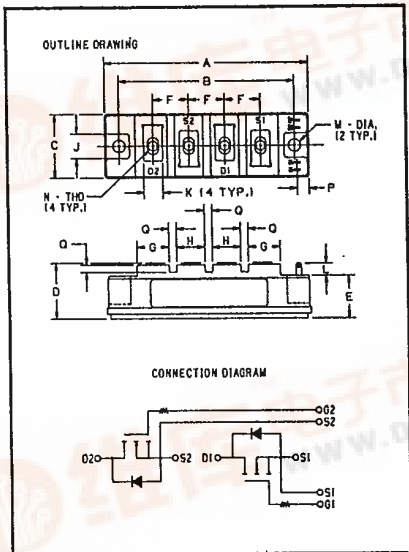
T-39-15

**POWEREX**

**JT220510 Tentative**

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

**Split-Dual FETMOD™  
Power Module  
100 Amperes/50 Volts**



**50 Volts JT220510  
Outline Drawing**

Dimension	Inches	Millimeters
A	4.252 Max.	108 Max.
B	3.661 ± .012	93 ± 0.3
C	1.338 Max.	34 Max.
D	1.181 Max.	30 Max.
E	.906	23
F	.748	19
G	.650	16.5
H	.591	15
J	.512	13
K	.394	10
L	.256 Min.	6.5 Min.
M	.256 Dia.	6.5 Dia.
N	M5 Metric	M5
P	.197	5
Q	.157	4



**JT220510  
Split-Dual FETMOD™  
Power Module  
100 Amperes/50 Volts**

**Description**

Powerex Split-Dual FETMOD™ Power 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<sub>DS(on)</sub>
- 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. JT220510 is a 50 Volt, 100 Ampere Split-Dual FETMOD™ Module.

Type	V <sub>oss</sub> Volts (x10)	Current Rating Amperes (x10)
JT22	05	10





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**JT220510**  
**Split-Dual FETMOD™ Power Module**  
 100 Amperes/50 Volts

**Maximum Ratings  $T_J = 25^\circ\text{C}$  unless otherwise specified**

	Symbol	JT220510	Units
Junction Temperature	$T_J$	-55 to 150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-40 to 125	$^\circ\text{C}$
Drain Source Voltage	$V_{DSS}$	50	Volts
Gate-Source Voltage	$V_{GSS}$	$\pm 20$	Volts
Continuous Drain Current	$I_D$	100	Amperes
Continuous Source Current	$I_S$	100	Amperes
Pulsed Drain Current Repetitive	$I_{DM}$	200	Amperes
Power Dissipation	$P_T$	310	Watts
Max. Mounting Torque Terminal Screws (M5)	—	17	in.-lb.
Max. Mounting Torque Mounting Screws (M6)	—	26	in.-lb.
Module Weight	—	250	Grams
V isolation	$V_{RMS}$	2500	Volts



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JT220510

Split-Dual FETMOD™ Power Module

100 Amperes / 50 Volts

Static Electrical Characteristics  $T_J = 25^\circ\text{C}$  unless otherwise specified

Characteristics	Symbol	Test Conditions	JT220510			Units
			Min.	Typ.	Max.	
Zero Gate Voltage Drain Current	$I_{OSS}$	$V_{DS} = V_{DSS}, V_{GS} = 0V$	—	—	1	mA
Zero Gate Voltage Drain Current	$I_{OSS}$	$V_{DS} = 0.8 V_{DSS}, V_{GS} = 0V$ $T_J = 150^\circ\text{C}$	—	—	4	mA
Gate Source Threshold	$V_{GS(th)}$	$I_D = 1 \text{ mA}, V_{DS} = 10V$	1.5	2.5	4	Volts
Gate Source Leakage	$\pm I_{GSS}$	$\pm V_{GS} = \pm 20V$ $V_{DS} = 0V$	—	—	0.5	$\mu\text{A}$
Drain Source On State Resistance*	$R_{DS(on)}$	$V_{GS} = 15V, I_D = 100A$	—	—	15	$\text{m}\Omega$
		$V_{GS} = 15V, I_D = 100A, T_J = 150^\circ\text{C}$	—	—	25	$\text{m}\Omega$
Drain Source On State Voltage*	$V_{DS(on)}$	$V_{GS} = 15V, I_D = 100A$	—	—	1.5	Volts
		$V_{GS} = 15V, I_D = 100A, T_J = 150^\circ\text{C}$	—	—	2.5	Volts
Thermal Resistance, Case to Sink Lubricated	$R_{\theta CS}$	—	—	—	—	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	Per Device	—	—	0.4	$^\circ\text{C/W}$

\* Pulse Test: Pulse width  $\leq 10\mu\text{s}$



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

JT220510

Split-Dual FETMOD™ Power Module  
100 Amperes/150 Volts

### Source-Drain Diode Characteristics $T_J = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	JT220510			Units
			Min.	Typ.	Max.	
Source-Drain Voltage	$V_{SD}$	$I_S = 100\text{A}$ , $V_{GS} = 0\text{V}$	—	—	2.5	Volts
Reverse Recovery Time	$t_{rr}$	$I_S = 100\text{A}$ , $di_S/dt = 200\text{A}/\mu\text{s}$ , $V_{GS} = 0\text{V}$	—	—	500	$\mu\text{s}$

### Dynamic Electrical Characteristics $T_J = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Test Conditions	JT220510			Units
			Min.	Typ.	Max.	
Forward Transconductance	$g_{fs}$	$I_D = 50\text{A}$ , $V_{DS} = 10\text{V}$ $t_w \leq 300\mu\text{s}$ , Duty=2%	10	20	—	mhos
Input Capacitance	$C_{iss}$	$V_{GS} = 0\text{V}$ , $V_{DS} = 10\text{V}$ , $f = 1\text{ Mhz}$	—	—	10	nf
Output Capacitance	$C_{oss}$		—	—	8	nf
Reverse Transfer Capacitance	$C_{rss}$		—	—	6	nf
Total Gate Charge	$Q_G$	$V_{DD} = 0.8 V_{DSS}$ $V_{GS} = 10\text{V}$ , $I_D = 100\text{A}$	—	—	—	nC
Turn On Time**	$t_{on}$	$V_{DD} = 0.5 V_{DSS}$ $I_D = 100\text{A}$ , $V_{GS} = 15\text{V}$ $R_{GEN} = R_{GS} = 3.3\Omega$	—	—	350	ns
Turn Off Time**	$t_{off}$		—	—	350	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.