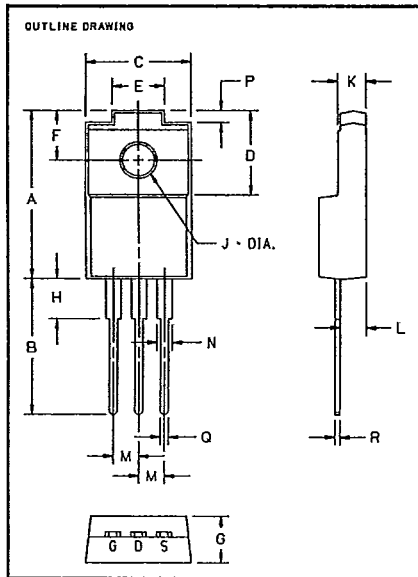
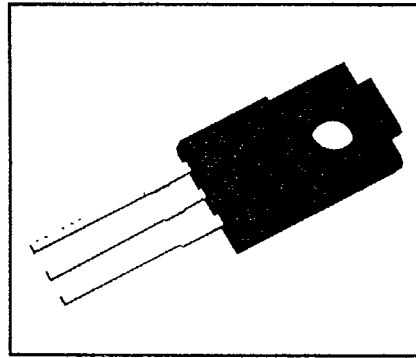


POWEREX**J1025****Tentative**

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

**Single EXMOS™
MOSFET**
20 Amperes/50 Volts**50 Volts J1025
Outline Drawing****J1025
Single EXMOS™ MOSFET**
20 Amperes/50 Volts**Description**

Powerex Single EXMOS™ MOSFET Transistors are designed for use in applications requiring hi-frequency switching and low loss control.

Features:

- ☐ TO-220F Isolated Package
- ☐ Vertical DMOS Construction
- ☐ Low Drive Requirement
- ☐ No Second Breakdown

Applications:

- ☐ AC Motor Control
- ☐ UPS Inverters
- ☐ Switch Mode Power Supply
- ☐ PWM Regulators

Ordering Information

Select the complete five digit module part number you desire from the table i.e. J1025 is a 50 Volt, 20 Ampere Single EXMOS™ MOSFET.

Dimension	Inches	Millimeters
A	.669 ± .012	17 ± 0.3
B	.531 Min.	13.5 Min.
C	.413 Max.	10.5 Max.
D	.335 ± .012	8.5 ± 0.3
E	.205 ± .008	5.2 ± 0.2
F	.197 ± .012	5.0 ± 0.3
G	.185 Max.	4.7 Max.
H	.157 Max.	4.0 Max.
J	.126 + .008/- .000	3.2 + 0.2/- 0.0
K	.110 ± .008	2.8 ± 0.2
L	.102 ± .008	2.6 ± 0.2
M	.100 ± .010	2.54 ± 0.25
N	.059 Max.	1.5 Max.
P	.047 ± .012	1.2 ± 0.3
Q	.031 ± .004	0.8 ± 0.1
R	.020 ± .004	0.5 ± 0.1

Type	V _{DS} Volts (50)	Current Rating Amperes (20)
J1025	—	—



T-39-13

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J1025**Single EXMOS™ MOSFET****20 Amperes/50 Volts****Maximum Ratings** $T_c = 25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	J1025	Units
Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	$^\circ\text{C}$
Drain Source Voltage, $I_D = 1\text{mA}$, $V_{GS} = 0\text{V}$	V_{DS}	50	Volts
Gate-Source Voltage	V_{GS}	± 30	Volts
Continuous Drain Current	I_D	15	Amperes
Continuous Source Current	I_S	15	Amperes
Pulsed Drain Current Repetitive	I_{DM}	60	Amperes
Power Dissipation	P_T	45	Watts
V Isolation	V_{RMS}	1500	Volts
Max. Mounting Torque, Mounting Screw (M3)	—	7	in.-lb.

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

Characteristics	Symbol	Test Conditions	Min.	J1025 Typ.	Max.	Units
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = V_{DSS}$, $V_{GS} = 0\text{V}$	—	—	1	mA
Gate Source Leakage Current	$\pm I_{GSS}$	$V_{GS} = \pm 30\text{V}$, $V_{DS} = 0\text{V}$	—	—	0.1	μA
Gate Source Threshold Voltage	$V_{GS(th)}$	$I_D = 1\text{mA}$, $V_{DS} = 10\text{V}$	2	3	4	Volts
Drain Source On State Resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 10\text{A}$	—	.08	0.1	Ω
Drain Source On State Voltage	$V_{DS(on)}$	$V_{GS} = 10\text{V}$, $I_D = 10\text{A}$	—	0.8	1.0	Volts
Thermal Resistance, Junction to Case	$R_{\theta JC}$	—	—	—	2.78	$^\circ\text{C/W}$

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

Characteristics	Symbol	Test Conditions	Min.	J1025 Typ.	Max.	Units
Source-Drain Voltage	V_{SD}	$I_S = 10\text{A}$, $V_{GS} = 0\text{V}$	—	1.2	—	Volts
Reverse Recovery Time	t_{rr}	$I_S = 20\text{A}$, $dI_S/dt = -20\text{A}/\mu\text{s}$, $V_{GS} = 0\text{V}$	—	150	—	ns

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

Characteristics	Symbol	Test Conditions	Min.	J1025 Typ.	Max.	Units
Forward Transconductance	g_{fs}	$I_D = 10\text{A}$, $V_{DS} = 10\text{V}$	4	6	—	mhos
Input Capacitance	C_{iss}	$V_{GS} = 0\text{V}$, $V_{DS} = 10\text{V}$, $f = 1\text{MHz}$	—	2000	—	pF
Output Capacitance	C_{oss}	$V_{GS} = 0\text{V}$, $V_{DS} = 10\text{V}$, $f = 1\text{MHz}$	—	1300	—	pF
Reverse Transfer Capacitance	C_{rss}	$V_{GS} = 0\text{V}$, $V_{DS} = 10\text{V}$, $f = 1\text{MHz}$	—	600	—	pF
Turn On Time (Note 1)	t_{on}	$V_{DD} = 25\text{V}$, $I_D = 10\text{A}$, $V_{GS} = 10\text{V}$	—	230	460	ns
Turn Off Time (Note 1)	t_{off}	$R_{GEN} = R_{GS} = 50\Omega$	—	200	400	ns

Note 1: 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)

POWEREX

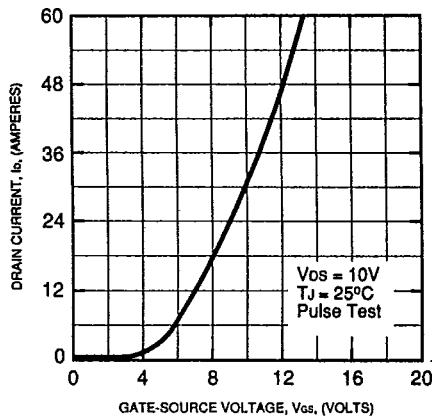
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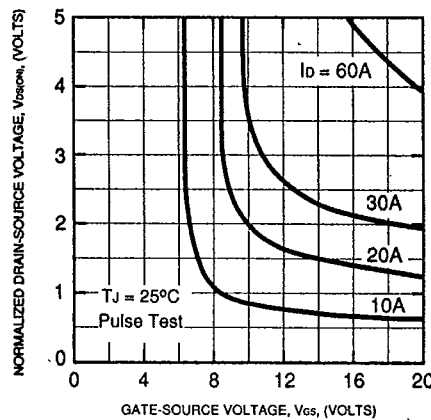
J1025

Single EXMOS™ MOSFET
20 Amperes/50 Volts

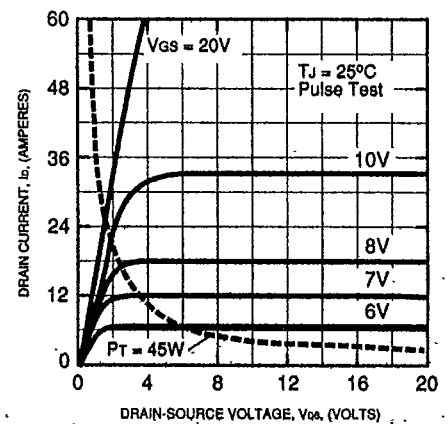
TRANSFER CHARACTERISTICS
(TYPICAL)
J1025



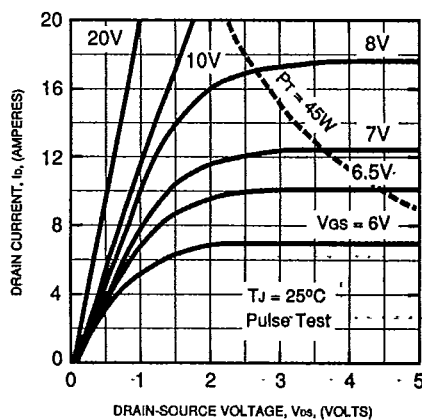
NORMALIZED DRAIN-SOURCE
ON-STATE VOLTAGE (TYPICAL)
J1025



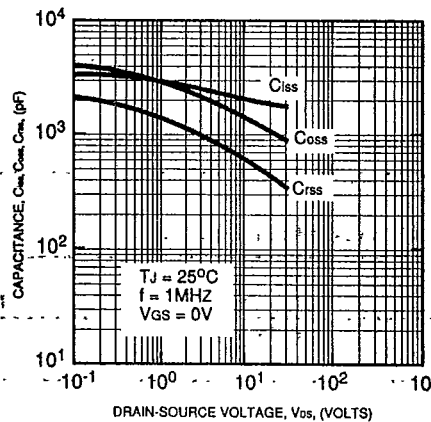
COMMON SOURCE OUTPUT
CHARACTERISTICS (TYPICAL)
J1025



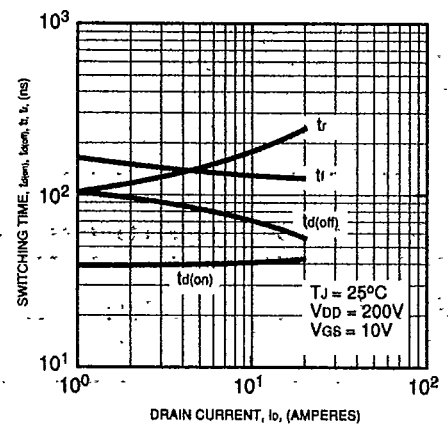
COMMON SOURCE OUTPUT
CHARACTERISTICS (TYPICAL)
J1025



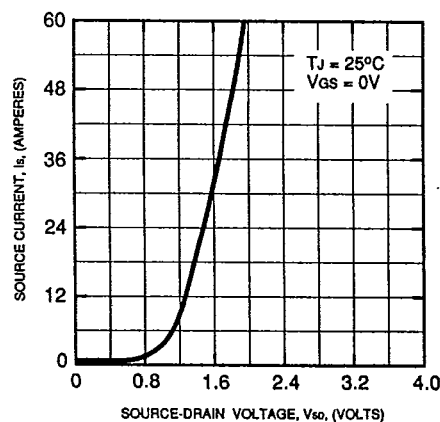
CAPACITANCE VS. DRAIN-SOURCE VOLTAGE
(TYPICAL)
J1025



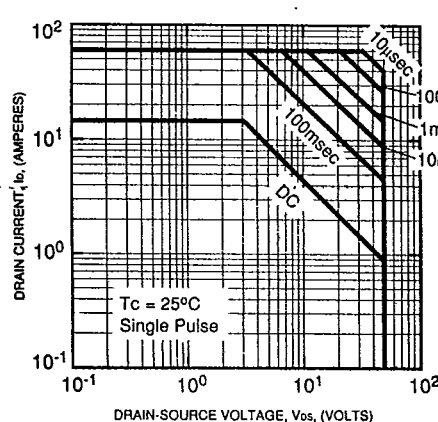
SWITCHING CHARACTERISTICS
(TYPICAL)
J1025



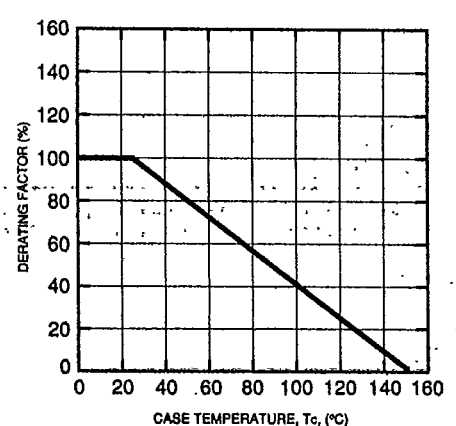
SOURCE-DRAIN DIODE
FORWARD CHARACTERISTICS (TYPICAL)
J1025



FORWARD BIAS SAFE OPERATING AREA
(S.O.A.)
J1025



TEMPERATURE DERATING FACTOR
OF SAFE OPERATING AREA (S.O.A.)
J1025





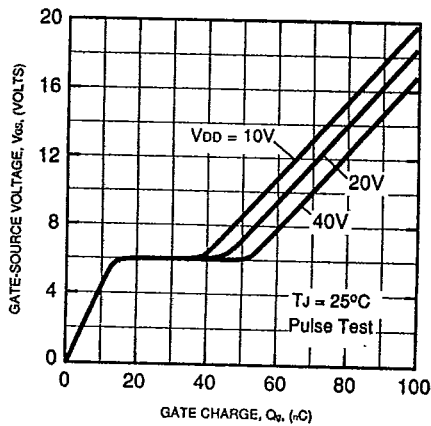
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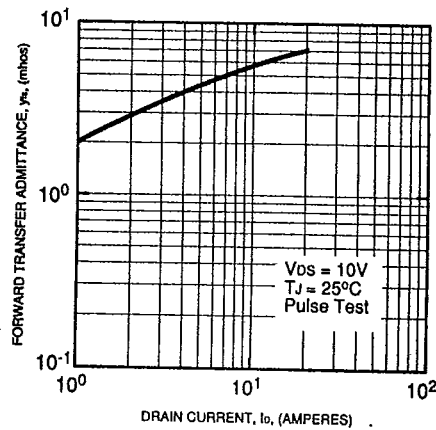
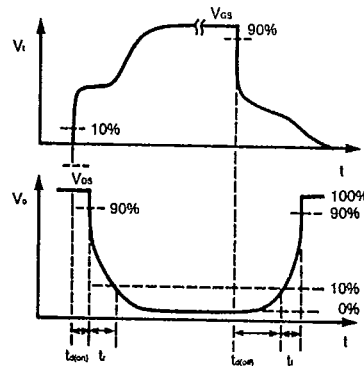
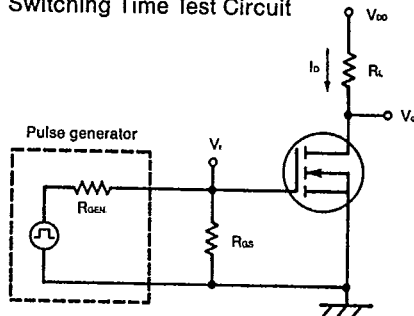
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J1025**Single EXMOS™ MOSFET****20 Amperes/50 Volts**

GATE CHARGE VS. V_{DS} AND V_{GS}
(TYPICAL)
J1025



FORWARD TRANSFER ADMITTANCE VS. DRAIN CURRENT (TYPICAL)
J1025

**Switching Time Test Circuit**

Notice: MOS devices are susceptible to damage from electrostatic charge. Reasonable precautions in handling should be observed.