

N-Channel Enhancement Mode
Avalanche Rated
Low Q_g and R_g
High dv/dt

Preliminary Data Sheet

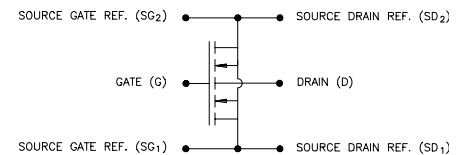
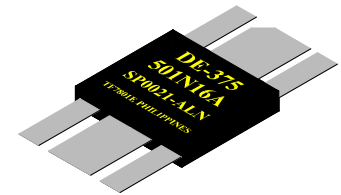
$$V_{DSS} = 500 \text{ V}$$

$$I_{D25} = 16 \text{ A}$$

$$R_{DS(on)} = .5 \Omega$$

Symbol	Test Conditions	Maximum Ratings	
V_{DSS}	$T_J = 25^\circ\text{C}$ to 150°C	500	V
V_{DGR}	$T_J = 25^\circ\text{C}$ to 150°C ; $R_{GS} = 1 \text{ M}\Omega$	500	V
V_{GS}	Continuous	± 20	V
V_{GSM}	Transient	± 30	V
I_{D25}	$T_c = 25^\circ\text{C}$	16	A
I_{DM}	$T_c = 25^\circ\text{C}$, pulse width limited by T_{JM}	128	A
I_{AR}	$T_c = 25^\circ\text{C}$	16	A
E_{AR}	$T_c = 25^\circ\text{C}$	20	mJ
dv/dt	$I_S \leq I_{DM}$, $di/dt \leq 100 \text{ A}/\mu\text{s}$, $V_{DD} \leq V_{DSS}$, $T_J \leq 150^\circ\text{C}$, $R_G = 0.2 \Omega$	5	V/ns
	$I_S = 0$	>200	V/ns
P_{DHS}	$T_c = 25^\circ\text{C}$	300	W
P_{DAMB}	$T_c = 25^\circ\text{C}$	3.0	W
T_J		-55...+150	$^\circ\text{C}$
T_{JM}		150	$^\circ\text{C}$
T_{stg}		-55...+150	$^\circ\text{C}$
T_L	1.6mm (0.063 in) from case for 10 s	300	$^\circ\text{C}$
Weight		2	g

Symbol	Test Conditions	Characteristic Values		
		$T_J = 25^\circ\text{C}$ unless otherwise specified		
		min.	typ.	max.
V_{DSS}	$V_{GS} = 0 \text{ V}$, $I_D = 3 \text{ ma}$	500		V
$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 4 \text{ ma}$	2.5		5.5 V
I_{GSS}	$V_{GS} = \pm 20 \text{ V}_{DC}$, $V_{DS} = 0$			$\pm 100 \text{ nA}$
I_{DSS}	$V_{DS} = 0.8 V_{DSS}$, $T_J = 25^\circ\text{C}$			50 μA
	$V_{GS} = 0$, $T_J = 125^\circ\text{C}$			1 mA
$R_{DS(on)}$	$V_{GS} = 15 \text{ V}$, $I_D = 0.5 I_{D25}$ Pulse test, $t \leq 300 \mu\text{s}$, duty cycle $d \leq 2\%$			.5 Ω
g_{fs}	$V_{DS} = 15 \text{ V}$, $I_D = 0.5 I_{D25}$, pulse test	2	6	S



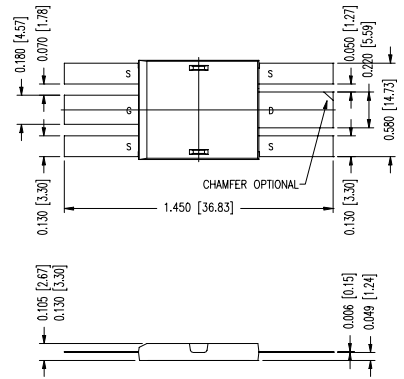
Features

- Isolated Substrate
 - high isolation voltage (>2500V)
 - excellent thermal transfer
 - Increased temperature and power cycling capability
- IXYS advanced low Q_g process
- Low gate charge and capacitances
 - easier to drive
 - faster switching
- Low $R_{DS(on)}$
- Very low insertion inductance (<2nH)

Advantages

- Optimized for RF and high speed switching at frequencies to 100MHz
- Easy to mount—no insulators needed
- High power density

Symbol	Test Conditions	Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
		min.	typ.	max.
R_G			0.3	Ω
C_{iss}			1800	pF
C_{oss}	$V_{GS} = 0\text{ V}$, $V_{DS} = 0.8 V_{DSS(max)}$, $f = 1\text{ MHz}$		150	pF
C_{rss}			45	pF
$T_{d(on)}$			3	ns
T_{on}	$V_{GS} = 15\text{ V}$, $V_{DS} = 0.8 V_{DSS}$ $I_D = 0.5 I_{DM}$		2	ns
$T_{d(off)}$	$R_G = 0.2\ \Omega$ (External)		4	ns
T_{off}			5	ns
$Q_{g(on)}$			50	nC
Q_{gs}	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.5 V_{DSS}$ $I_D = 0.5 I_{D25}$		20	nC
Q_{gd}			30	nC
R_{thJC}			0.35	K/W
R_{thJHS}			0.45	K/W



Source-Drain Diode		Characteristic Values ($T_J = 25^\circ\text{C}$ unless otherwise specified)		
Symbol	Test Conditions	min.	typ.	max.
I_S	$V_{GS} = 0\text{ V}$			6 A
I_{SM}	Repetitive; pulse width limited by T_{JM}			48 A
V_{SD}	$I_F = I_S$, $V_{GS} = 0\text{ V}$, Pulse test, $t \leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$			1.5 V
T_{rr}			200	ns
Q_{RM}	$I_F = I_S$, $-di/dt = 100\text{ A}/\mu\text{s}$, $V_R = 100\text{ V}$		0.6	μC
I_{RM}			4	A

Directed Energy, Inc. reserves the right to change limits, test conditions and dimensions.

DEI MOSFETS are covered by one or more of the following U.S. patents:

4,835,592	4,850,072	4,881,106	4,891,686	4,931,844	5,017,508
5,034,796	5,049,961	5,063,307	5,187,117	5,237,481	5,486,715
5,381,025	5,640,045				

