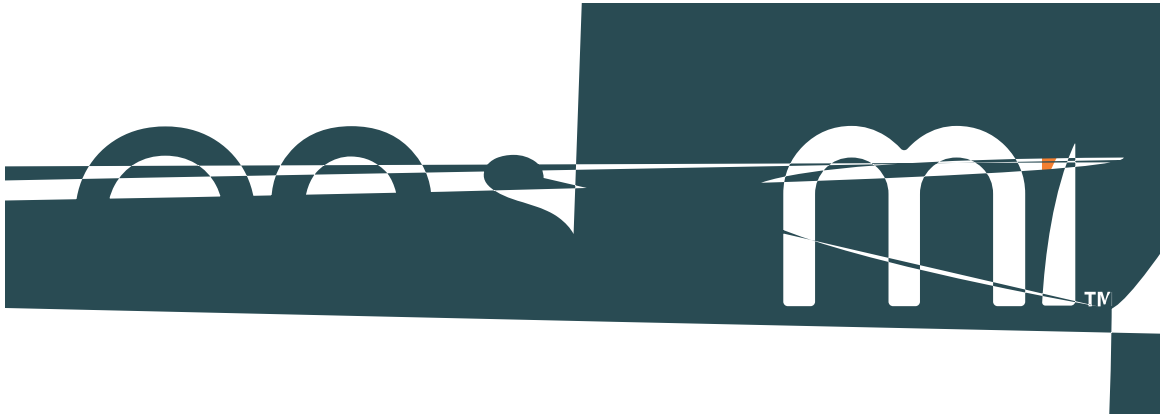
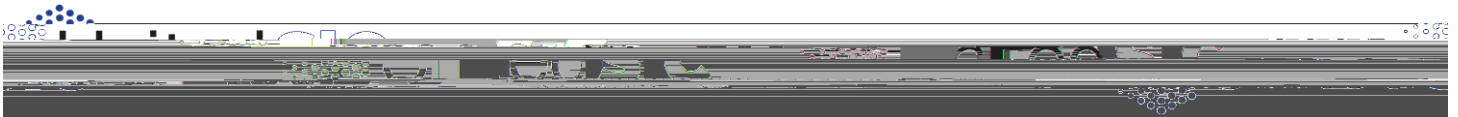


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Description

Features

- § Voltage controlled
- § Low gate charge
- § Low intrinsic capacitance
- § RoHS compliant
- § AECQ Qualified (AEC-Q101)

Typical Applications

- § Over current protection circuits
- § DC-AC inverters
- § Switch mode power supplies
- § Power factor correction modules
- § Motor drives
- § Induction heating

Maximum Ratings

Symbol	Units
V_{DS}	V
	A
	A
I_{DM}	A
P_{tot}	W
$T_{J,max}$	°C
T_J, T_{STG}	°C
T_L	°C

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Electrical Characteristics (T_J = +25°C unless otherwise specified)

Typical Performance - Static

			Min	Typ	Max	
	BV _{DS}		1200			V
Total drain leakage current		V _{DS} = 1200V, V _{GS} = -20V, J = 25°C		10	60	
				35		
Total gate leakage current				12	100	
				50		
				31		
				35	45	
				68		
				76		
Gate threshold voltage	V _{G(th)}	V _{DS} = 5V, I _D = 70mA	-14	-11.5	-6	V
Gate resistance	R _G	f = 1MHz, open drain		2.4		:

Typical Performance - Dynamic

Parameter	symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Input capacitance	C_{iss}	$V_{DS} = 100V,$ $V_{GS} = -20V,$ $f = 100kHz$		2145		pF
Output capacitance	C_{oss}			180		
Reverse transfer capacitance	C_{rss}			172		
Effective output capacitance, energy related	$C_{oss(er)}$	$V_{DS} = 0V \text{ to } 800V,$ $V_{GS} = -20V$		105		pF
Total gate charge	Q_G	$V_{DS} = 800V, I_D = 40A,$ $V_{GS} = -18V \text{ to } 0V$		235		nC
Gate-drain charge	Q_{GD}			130		
Gate-source charge	Q_{GS}			25		
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 800V, I_D = 40A,$ Gate Driver = -18V to 0V $R_{G,EXT} = 1\Omega,$ Inductive Load, FWD: UJ3D1220KSE $T_J = 25^\circ C$		25		ns
Rise time	t_r			37		
Turn-off delay time	$t_{d(off)}$			48		
Fall time	t_f			39		
Turn-on energy	E_{ON}			935		
Turn-off energy	E_{OFF}		828			
Total switching energy	E_{TOTAL}		1763			
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 800V, I_D = 40A,$ Gate Driver = -18V to 0V $R_{G,EXT} = 1\Omega,$ Inductive Load, FWD: UJ3D1220KSE $T_J = 150^\circ C$		24		ns
Rise time	t_r			35		
Turn-off delay time	$t_{d(off)}$			43		
Fall time	t_f			37		
Turn-on energy	E_{ON}			880		
Turn-off energy	E_{OFF}		800			
Total switching energy	E_{TOTAL}		1680			

Thermal Characteristics

Parameter	symbol	Test Conditions	Value			Units
			Min	Typ	Max	
Thermal resistance, junction-to-case	R_{TC}			0.27	0.35	$^\circ C/W$



Typical Performance Diagrams

Figure 1 Typical output characteristics
at $T_J = -55^\circ\text{C}$

Figure 2 Typical output characteristics
at $T_J = 25^\circ\text{C}$

Figure 3 Typical output characteristics
at $T_J = 175^\circ\text{C}$

Figure 4 Typical drain-source leakage
at $V_{GS} = -20\text{V}$



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Figure 5 Typical capacitances at 100kHz
and $V_{GS} = -20V$

Figure 6 Typical transfer characteristics
at $V_{DS} = 5V$

Figure 7 Normalized on-resistance vs.
temperature at V_{GS}

Figure 8 Typical drain-source

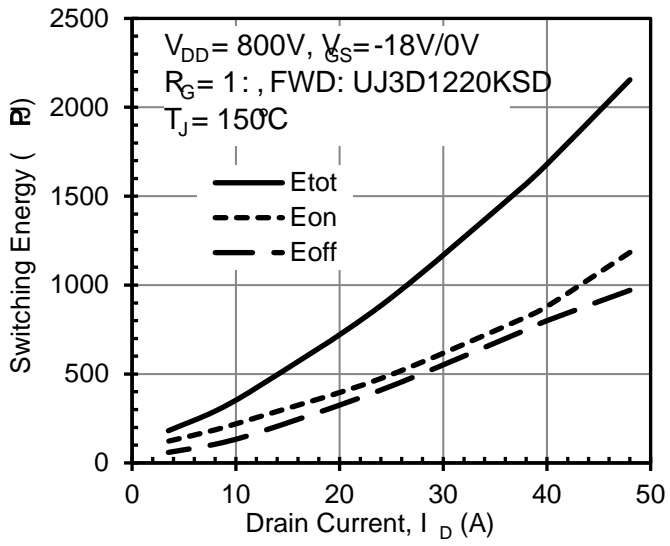
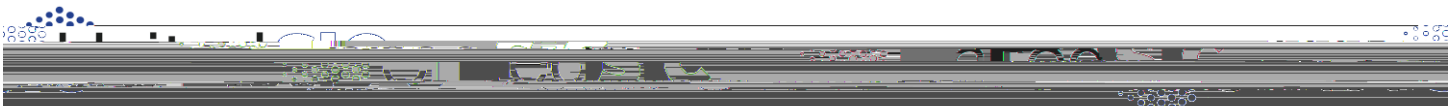
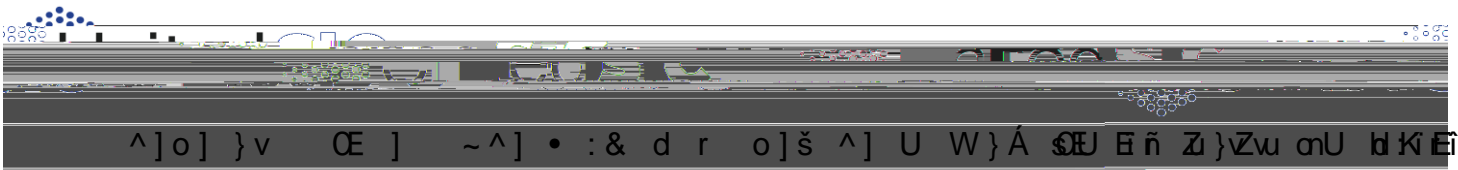


Figure 17 Clamped inductive switching energy vs. drain current at $T_J = 150^\circ C$

Figure 18 Clamped inductive switching energy vs. gate resistor R_G

Figure 19 Clamped inductive switching energy vs. junction temperature at $I_D = 40A$



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TO-247-3L PACKA OUTLINE, PART MARK AND TUBE SPECIFICAT

PACKAGE OUTLINE

SYM	MIN	MAX	MIN	MAX
A	0.185	0.209	4.699	5.309
A1	0.087	0.102	2.21	2.61
A2	0.059	0.098	1.499	

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