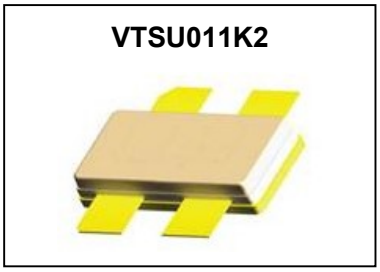
1200W, 100V RF Power N-channel MOSFETs

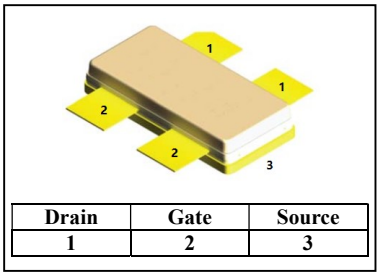
Description

The VTSU011K2 is a 1200-watt, N-channel MOSFETs, designed for pulsed applications at frequencies up to 200 MHz. It's suitable for use in industrial, scientific and medical applications.

- Typical Performance (In Demo Fixture): V_{DD} = 100 Volts, I_{DQ} = 500 mA, Pulse CW, Pulse Width=1ms, Duty cycle=10%

Frequency	Gp (dB)	P_{OUT} (W)	η_D (%)
120 MHz	26	1200	60





Drain	Gate	Source
1	2	3

Figure 1. Pin Connection

Features

- Common source configuration, push pull
- Excellent thermal stability, low HCI drift
- Low $R_{DS(on)}$
- Pb-free, RoHS-compliant

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain-Source Voltage	$V_{(BR)DSS}$	200	V
Drain-Gate Voltage (RGS = 1MΩ)	V_{DGR}	200	V
Gate-Source Voltage	V_{GS}	-20 to +20	V
Storage Temperature Range	Tstg	-65 to 150	°C
Case Operating Temperature	T_C	150	°C
Operating Junction Temperature	T_J	200	°C

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Junction-Case Thermal Resistance	R_{thJC}	0.078	°C/W

Table 3. ESD Protection Characteristics

Test Methodology	Class
Human Body Model (per JESD22--A114)	Class 2

Table 4. Electrical Characteristics (T_{CASE} = 25 ℃ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V_{GS}=0, I_{DS}=100mA	$V_{(BR)DSS}$	200	250		V
Zero Gate Voltage Drain Leakage Current (V_{DS} = 100V, V_{GS} = 0 V)	I_{DSS}			1	mA

Gate-Source Leakage Current (V_{GS} = 20 V, V_{DS} = 0 V)	I_{GSS}			250	nA
Gate Threshold Voltage (V_{DS} = 10V, I_D = 250 mA)	$V_{GS}(th)$	2.0		4.0	V
Drain-Source Voltage (On state) (V_{GS} = 10V, I_D = 10 A)	$V_{DS(ON)}$			3.7	V
Forward Transconductance (V_{DS} = 10 V, I_D = 2.5 A)	g_{FS}	6			S
Common Source Input Capacitance (V_{GS} = 0V, V_{DS} =100 V, f = 1 MHz)	C_{ISS}		568		pF
Common Source Output Capacitance (V_{GS} = 0V, V_{DS} =100 V, f = 1 MHz)	C_{OSS}		135		pF
Common Source Feedback Capacitance (V_{GS} = 0V, V_{DS} =100 V, f = 1 MHz)	C_{RSS}		9		pF

Functional Tests (In Demo Test Fixture, 50 ohm system) V_{DD} = 100 Vdc, I_{DQ} = 2×250mA, f = 120 MHz, Pulse CW, Pulse Width=1ms, Duty cycle=10%.

Output Power	P_{OUT}	1000	1200		W
Power Gain@ P_{OUT}=1000W	Gp		26		dB
Drain Efficiency@ P_{OUT}=1000W	η_D		60		%

TYPICAL CHARACTERISTICS

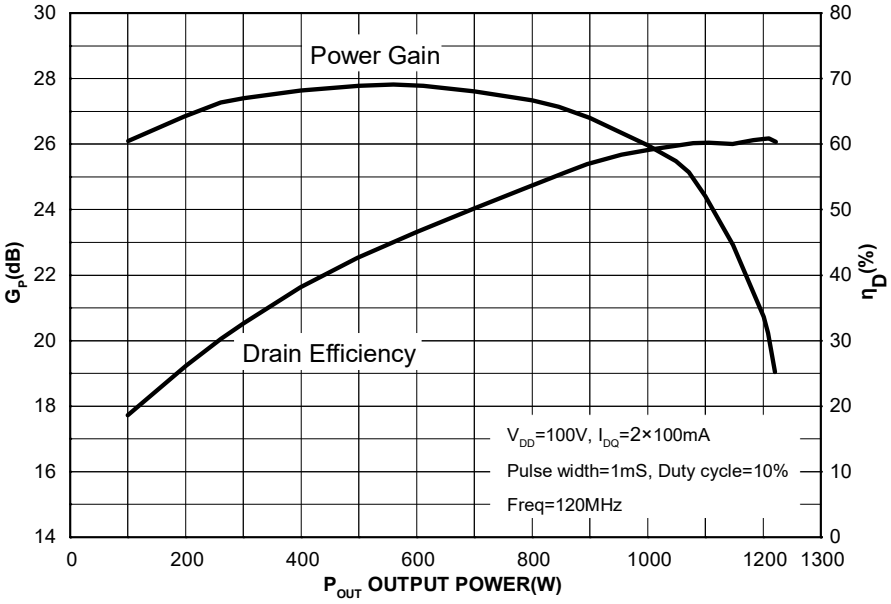
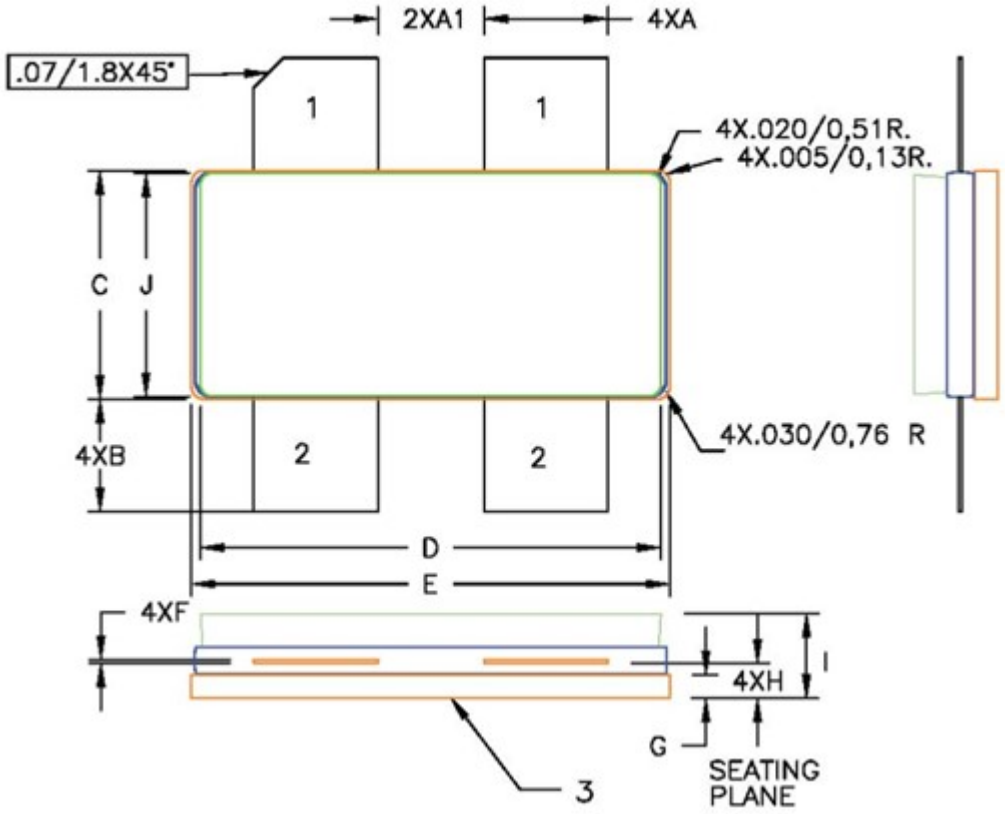


Figure 2. Power gain and drain efficiency as function of output power

Package Outline

Flanged ceramic package; 2 mounting holes; 4 leads(1—Drain,2—Gate,3—Source)



UNIT	A	A1	B	C	D	E	F	G	H	I	J
mm	5.59 5.10	4.83 4.32	5.33 4.32	9.91 9.65	20.02 19.61	20.70 20.45	1.15 0.08	1.14 0.89	1.7 1.45	4.32 3.18	9.53 9.27

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-VD3					28/11/2016

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2016/11/28	Rev 1.0	Create Production Datasheet

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