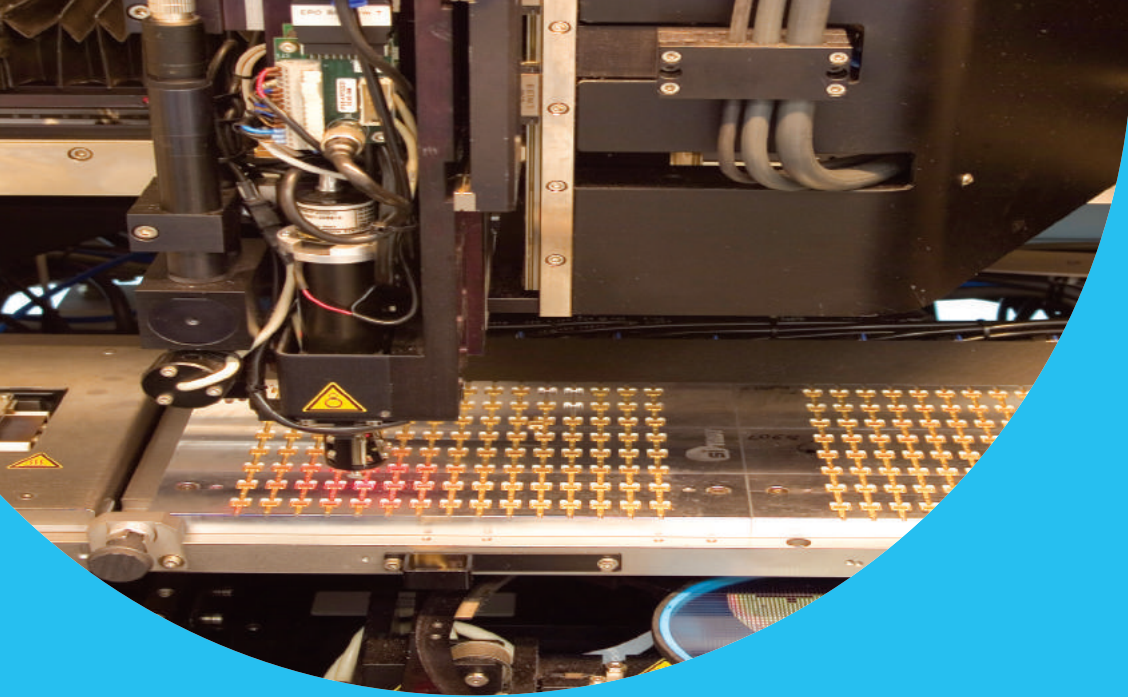


RF VDMOS Power

High performance components for communications





Quality and Experience in RF Technology.

A Proven Record

TT Electronics, under the Semelab brand, has been supplying high quality, high reliability semiconductors and modules since 1974. Customers around the world are using TT Electronics devices in applications where performance, consistency and reliability are imperative. Equipment as diverse as television and radio transmitters, space vehicles, aircraft equipment and banking systems are all using TT Electronics products.

In-house Assembly, Test and Engineering

All aspects of design, processing, testing, packaging and qualification take place within TT Electronics, thereby ensuring complete control over quality and reliability.

TT Electronics holds quality approvals for processes and products from major standards organisations, including ISO and the DLA amongst others.

Extensive Range of RF Products

TT Electronics' range of RF power MOSFETs is one of the widest available and includes over 100 devices. There is a device for almost any application - from low cost to ultra-high performance, from 750mW to over 400W, and for frequencies to 1GHz.

Parts for 12.5V, 28V and 50V are available in both single-ended and push-pull formats. A comprehensive range of package styles including conventional flange mount, BeO-free flange-mount, surface mount and plastic enables TT Electronics devices to be used with any board technology. All parts are fully RoHS compliant.



Technical Excellence.

TT Electronics RF MOSFETs are manufactured using a unique silicon Vertical DMOS process with gold metalisation which gives high performance and maximum reliability at high power levels. Among the benefits of the TT Electronics process are:

- Ultra wide band - 1MHz to 1GHz
- Wide power range - 750mW to 400W
- Exceptionally low feedback capacitance resulting in:
 - High gain via reduced Miller Effect (20dB VHF, 16dB UHF)
 - High stability
 - Easier design
- Low $R_{ds(on)}$ for high efficiency (>50%)
- High breakdown voltage (typically 85V for 28V parts) for exceptional ruggedness (up to 20:1 VSWR withstand)
- Excellent thermal stability

Packaging and Screening Options

We can provide alternative packaging and customised electrical selection and screening to meet customers' detailed specifications. Our specialist team has experience in all aspects of RF technology - including not only silicon but also package technology and RF design. As a result we are able to liaise with our customers 'engineer-to-engineer' and supply devices that meet the needs of the application precisely. Examples include TT Electronics' use of standard LDMOS packages for VDMOS MOSFETs to produce unique and proprietary BeO-free VDMOS parts that have higher gain and lower thermal resistance than conventional parts, and truly hermetic RF MOSFETs for space applications.

Continuity of Supply

TT Electronics has a policy of continuing supply on the die technology used in all products and has never discontinued an RF MOSFET die. We are committed to supporting all our RF products indefinitely, and will build any product required by our customers provided only that supplies of the chosen package are available.

We can also provide alternatives from within our range to many devices discontinued by other manufacturers. The manufacturer cross-reference tool on our website provides the details of our alternative solutions, please visit: <http://products.semelab-tt.com/rf/equivalents.php>

28V DEVICES FOR FREQUENCIES TO 1GHZ

Device	Min. Output Power (W)	Min. Efficiency (%)	Min. Gain (dB)	Test Frequency (MHz)	Operating Voltage (V)	Package Type	Single-Ended/ Push-Pull	Application Frequency	Active FET Configuration	Breakdown Voltage (V)
D1001UK	20	50	16	175	28	DA	SINGLE-ENDED	1-175MHz	1	70
D1002UK	40	50	16	175	28	DA	SINGLE-ENDED	1-175MHz	2	70
D1003UK	60	50	16	175	28	DM	SINGLE-ENDED	1-175MHz	3	70
D1004UK	80	50	16	175	28	DT	SINGLE-ENDED	1-175MHz	4	70
D1005UK	80	50	16	175	28	DM	SINGLE-ENDED	1-175MHz	4	70
D1006UK	120	50	14	175	28	DV	SINGLE-ENDED	1-200MHz	6	70
D1007UK	40	50	13	400	28	DK	PUSH-PULL	1-1000MHz	1+1	70
D1008UK	80	50	13	400	28	DK	PUSH-PULL	1-500MHz	2+2	70
D1009UK	150	50	10	400	28	DR	PUSH-PULL	1-500MHz	4+4	70
D1010UK	125	60	10	400	28	DR	PUSH-PULL	1-500MHz	4+4	70
D1011UK	10	50	13	500	28	SO8	SINGLE-ENDED	1-1000MHz	1	70
D1012UK	100	50	10	500	28	DH	PUSH-PULL	1-500MHz	3+3	70
D1013UK	20	50	13	500	28	DP	SINGLE-ENDED	1-1000MHz	1	70
D1014UK	40	50	12	500	28	DP	SINGLE-ENDED	1-500MHz	2	70
D1015UK	125	50	13	400	28	DH	PUSH-PULL	1-400MHz	4+4	70
D1016UK	40	50	13	400	28	DQ	PUSH-PULL	1-1000MHz	1+1	70
D1017UK	150	50	13	175	28	DM	SINGLE-ENDED	1-200MHz	6	70
D1018UK	100	50	10	500	28	DD	PUSH-PULL	1-500MHz	3+3	70
D1019UK	20	50	16	175	28	DW	SINGLE-ENDED	1-175MHz	1	70
D1020UK	150	50	10	400	28	DR	PUSH-PULL	1-500MHz	5+5	70
D1021UK	125	50	13	400	28	DK	PUSH-PULL	1-400MHz	4+4	70
D1022UK	100	50	10	500	28	DK	PUSH-PULL	1-500MHz	3+3	70
D1023UK	60	50	16	175	28	DT	SINGLE-ENDED	1-175MHz	3	70
D1024UK	40	50	13	400	28	DD	PUSH-PULL	1-500MHz	1+1	70
D1025UK	100	50	16	175	28	DT	SINGLE-ENDED	1-175MHz	5	70
D1027UK	150	50	13	175	28	DR	PUSH-PULL	1-200MHz	6+6	70
D1028UK	300	60	13	175	28	DR	PUSH-PULL	1-200MHz	6+6	70
D1029UK	350	60	13	175	28	DR	PUSH-PULL	1-200MHz	7+7	70
D1030UK	400	50	13	175	28	DR	PUSH-PULL	1-200MHz	8+8	70
D1031UK	10	50	13	500	28	F-0127	SINGLE-ENDED	1-1000MHz	1	70
D1034UK	80	50	13	400	28	DD	PUSH-PULL	1-500MHz	2+2	70
D1036UK	100	50	14	175	28	DM	SINGLE-ENDED	1-175MHz	5	70
D1053UK	50	45	7.5	1000	28	DB	PUSH-PULL	1-1000MHz	1+1+1+1	70
D1093UK	10	50	13	500	28	SOT171	SINGLE-ENDED	1-1000MHz	4	65
D1094UK	20	50	11	500	28	SOT171	SINGLE-ENDED	1-1000MHz	6	65

- Ultra-high linearity, low $R_{ds(on)}$ and high efficiency
- Very high gain and exceptionally rugged
- We will be pleased to discuss your requirements for die and package configurations not listed above

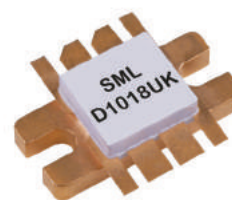
DA Package



DB Package



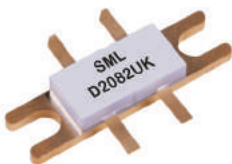
DD Package



DH Package



DK Package



DM Package



DP Package



DP Flangeless Package



28V DEVICES OPTIMISED FOR HIGHER FREQUENCIES

Device	Min. Output Power (W)	Min. Efficiency (%)	Min. Gain (dB)	Test Frequency (MHz)	Operating Voltage (V)	Package Type	Single-Ended/ Push-Pull	Application Frequency	Active FET Configuration	Breakdown Voltage (V)
D2001UK	2.5	40	13	1000	28	DP	SINGLE-ENDED	1-1000MHz	1	65
D2002UK	5	40	13	1000	28	DP	SINGLE-ENDED	1-1000MHz	2	65
D2003UK	5	40	13	1000	28	DQ	PUSH-PULL	1-1000MHz	1+1	65
D2004UK	10	40	10	1000	28	DK	PUSH-PULL	1-1000MHz	2+2	65
D2005UK	7.5	40	13	1000	28	DP	SINGLE-ENDED	1-1000MHz	3	65
D2006UK	15	40	13	1000	28	DK	PUSH-PULL	1-1000MHz	3+3	65
D2007UK	5	40	13	400	28	DA	SINGLE-ENDED	1-500MHz	2	65
D2008UK	5	40	13	400	28	T039	SINGLE-ENDED	1-400MHz	2	65
D2009UK	10	40	10	1000	28	DQ	PUSH-PULL	1-1000MHz	2+2	65
D2010UK	20	40	13	1000	28	DP	SINGLE-ENDED	1-1000MHz	8	65
D2011UK	20	40	10	1000	28	DBC1	SINGLE-ENDED	1-1000MHz	8	65
D2012UK	10	40	10	1000	28	DP	SINGLE-ENDED	1-1000MHz	4	65
D2013UK	20	40	10	1000	28	DK	PUSH-PULL	1-1000MHz	4+4	65
D2014UK	2.5	40	13	500	28	SOT171	SINGLE-ENDED	1-1000MHz	1	65
D2015UK	5	40	13	500	28	SOT171	SINGLE-ENDED	1-1000MHz	2	65
D2016UK	30	40	10	1000	28	DK	PUSH-PULL	1-1000MHz	6+6	65
D2017UK	5	40	13	1000	28	Flangeless DP	SINGLE-ENDED	1-1000MHz	2	65
D2018UK	10	40	10	1000	28	Flangeless DP	SINGLE-ENDED	1-1000MHz	4	65
D2019UK	2.5	40	13	1000	28	SO8	SINGLE-ENDED	1-1000MHz	1	65
D2020UK	5	40	13	1000	28	SO8	SINGLE-ENDED	1-1000MHz	2	65
D2021UK	7.5	40	13	1000	28	SO8	SINGLE-ENDED	1-1000MHz	3	65
D2022UK	25	40	13	500	28	DQ	PUSH-PULL	1-500MHz	5+5	65
D2024UK	10	40	10	1000	28	SO8	SINGLE-ENDED	1-1000MHz	4	65
D2026UK	5	40	13	400	28	DW	SINGLE-ENDED	1-500MHz	2	65
D2029UK	2.5	40	13	1000	28	F-0127	SINGLE-ENDED	1-1000MHz	1	65
D2030UK	5	40	13	1000	28	F-0127	SINGLE-ENDED	1-1000MHz	2	65
D2031UK	7.5	40	13	1000	28	F-0127	SINGLE-ENDED	1-1000MHz	3	65
D2032UK	5	40	13	1000	28	DK	PUSH-PULL	1-1000MHz	1+1	65
D2053UK	5	40	13	1000	28	DBC4	PUSH-PULL	1-1000MHz	1+1	65
D2054UK	10	40	13	1000	28	DBC4	PUSH-PULL	1-1000MHz	2+2	65
D2081UK	0.75	40	11	1000	28	SOT223	SINGLE-ENDED	1-1000MHz	1	65
D2082UK	40	40	8	1000	28	DK	PUSH-PULL	1-1000MHz	8+8	65
D2089UK	1	40	20	30	28	E16	SINGLE-ENDED	1-1000MHz	1	65

The D20 series is optimised for performance at higher frequencies:

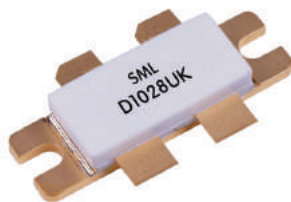
- High gain at higher frequencies
- Low capacitance
- Excellent Linearity
- Low $R_{ds(on)}$

- The exceptional ruggedness of the D10 series is retained
- We will be pleased to discuss your requirements for die and package configurations not listed above

DQ Package



DR Package



DT Package



DV Package



DW Package



E16 Package



SOT171 Package



T039 Package



12.5V DEVICES IN RANGES TO 500MHZ AND 1GHZ

Device	Min. Output Power (W)	Min. Efficiency (%)	Min. Gain (dB)	Test Frequency (MHz)	Operating Voltage (V)	Package Type	Single-Ended/ Push-Pull	Application Frequency	Active FET Configuration	Breakdown Voltage (V)
D1201UK	10	50	10	500	12.5	DP	SINGLE-ENDED	1-500MHz	1	40
D1202UK	20	50	10	400	12.5	DP	SINGLE-ENDED	1-500MHz	2	40
D1203UK	30	50	10	175	12.5	DM	SINGLE-ENDED	1-200MHz	3	40
D1204UK	30	50	10	175	12.5	DT	SINGLE-ENDED	1-200MHz	3	40
D1207UK	20	50	10	400	12.5	DQ	PUSH-PULL	1-500MHz	1+1	40
D1208UK	40	50	10	400	12.5	DK	PUSH-PULL	1-500MHz	2+2	40
D1209UK	20	50	10	400	12.5	DK	PUSH-PULL	1-500MHz	1+1	40
D1210UK	10	50	13	175	12.5	DA	SINGLE-ENDED	1-175MHz	1	40
D1211UK	10	50	10	500	12.5	SO8	SINGLE-ENDED	1-500MHz	1	40
D1212UK	60	50	10	175	12.5	DH	PUSH-PULL	1-200MHz	3+3	40
D1213UK	6	50	8	500	7.2	DBC1	SINGLE-ENDED	1-500MHz	2	40
D1217UK	40	50	10	400	12.5	DD	PUSH-PULL	1-500MHz	2+2	40
D1218UK	60	50	10	175	12.5	DD	PUSH-PULL	1-200MHz	3+3	40
D1221UK	10	50	10	175	12.5	DW	SINGLE-ENDED	1-175MHz	1	40
D1222UK	60	50	10	175	12.5	DK	PUSH-PULL	1-200MHz	3+3	40
D1231UK	10	50	10	500	12.5	F-0127	SINGLE-ENDED	1-500MHz	1	40
D1260UK	40	50	10	175	12.5	DT	SINGLE-ENDED	1-175MHz	4	40
D2201UK	2.5	40	10	1000	12.5	DP	SINGLE-ENDED	1-1000MHz	1	40
D2202UK	5	40	10	1000	12.5	DP	SINGLE-ENDED	1-1000MHz	2	40
D2203UK	5	40	10	1000	12.5	DQ	PUSH-PULL	1-1000MHz	1+1	40
D2204UK	20	40	10	500	12.5	DT	SINGLE-ENDED	1-1000MHz	8	40
D2205UK	7.5	40	10	1000	12.5	DP	SINGLE-ENDED	1-1000MHz	3	40
D2206UK	5	40	10	400	12.5	TO-39	SINGLE-ENDED	1-400MHz	2	40
D2207UK	10	40	10	1000	12.5	DQ	PUSH-PULL	1-1000MHz	2+2	40
D2208UK	40	40	10	500	12.5	DK	PUSH-PULL	1-500MHz	8+8	40
D2210UK	20	40	10	500	12.5	DP	SINGLE-ENDED	1-1000MHz	8	40
D2211UK	10	40	8	400	7.2	DBC1	SINGLE-ENDED	1-1000MHz	8	40
D2212UK	10	40	10	1000	12.5	DP	SINGLE-ENDED	1-1000MHz	4	40
D2213UK	20	40	10	1000	12.5	DK	PUSH-PULL	1-1000MHz	4+4	40
D2214UK	10	40	10	1000	12.5	Flangeless DP	SINGLE-ENDED	1-1000MHz	4	40
D2218UK	20	40	10	500	12.5	Flangeless DP	SINGLE-ENDED	1-1000MHz	8	40
D2219UK	2.5	40	10	1000	12.5	SO8	SINGLE-ENDED	1-1000MHz	1	40
D2220UK	5	40	10	1000	12.5	SO8	SINGLE-ENDED	1-1000MHz	2	40
D2221UK	7.5	40	10	1000	12.5	SO8	SINGLE-ENDED	1-1000MHz	3	40
D2224UK	5	50	7	850	7.2	SO8	SINGLE-ENDED	1-1000MHz	4	40
D2225UK	5	40	10	1000	12.5	SO8	PUSH-PULL	1-1000MHz	1+1	40
D2229UK	2.5	40	10	1000	12.5	F-0127	SINGLE-ENDED	1-1000MHz	1	40
D2230UK	5	40	10	1000	12.5	F-0127	SINGLE-ENDED	1-1000MHz	2	40
D2231UK	7.5	40	10	1000	12.5	F-0127	SINGLE-ENDED	1-1000MHz	3	40
D2232UK	5	50	7	850	7.2	F-0127	SINGLE-ENDED	1-1000MHz	4	40
D2240UK	5	40	10	1000	12.5	M227	PUSH-PULL	1-1000MHz	1+1	40
D2241UK	10	40	10	1000	12.5	M227	PUSH-PULL	1-1000MHz	2+2	40
D2253UK	5	40	13	1000	12.5	DBC4	PUSH-PULL	1-1000MHz	1+1	40
D2254UK	10	40	10	1000	12.5	DBC4	PUSH-PULL	1-1000MHz	2+2	40
D2256UK	20	40	10	1000	12.5	DBC4	PUSH-PULL	1-1000MHz	4+4	40
D2282UK	0.75	40	8	1000	6	SOT223	SINGLE-ENDED	1-1000MHz	1	40
D2290UK	1	40	10	1000	12.5	SOT143	SINGLE-ENDED	1-1000MHz	1	40
D2293UK	10	40	11	500	12.5	SOT171	SINGLE-ENDED	1-1000MHz	4	40
D2294UK	15	40	11	500	12.5	SOT171	SINGLE-ENDED	1-1000MHz	6	40

DBC1 Package



DBC4 Package



F0127 Package



SO8 Package



SOT143 Package



SOT223 Package



M227 Package



50V DEVICES FOR FREQUENCIES TO 500MHZ

Device	Min. Output Power (W)	Min. Efficiency (%)	Min. Gain (dB)	Test Frequency (MHz)	Operating Voltage (V)	Package Type	Single-Ended/ Push-Pull	Application Frequency	Active FET Configuration	Breakdown Voltage (V)
D5001UK	20	50	16	175	50	DA	SINGLE-ENDED	1-175MHz	1	125
D5002UK	40	50	16	175	50	DA	SINGLE-ENDED	1-175MHz	2	125
D5003UK	60	50	16	175	50	DM	SINGLE-ENDED	1-175MHz	3	125
D5005UK	80	50	16	175	50	DM	SINGLE-ENDED	1-175MHz	4	125
D5006UK	150	40	13	175	50	DV	SINGLE-ENDED	1-200MHz	7	125
D5007UK	150	40	13	175	50	DMX	SINGLE-ENDED	1-200MHz	7	125
D5011UK	10	50	13	500	50	SO8	SINGLE-ENDED	1-1000MHz	1	125
D5012UK	100	50	10	500	50	DH	PUSH-PULL	1-500MHz	3+3	125
D5013UK	20	50	13	500	50	DP	SINGLE-ENDED	1-500MHz	1	125
D5014UK	40	50	12	500	50	DP	SINGLE-ENDED	1-500MHz	2	125
D5017UK	150	50	10	175	50	DM	SINGLE-ENDED	1-175MHz	6	125
D5018UK	100	50	10	500	50	DD	PUSH-PULL	1-500MHz	3+3	125
D5021UK	125	50	13	400	50	DK	PUSH-PULL	1-400MHz	4+4	125
D5028UK	300	60	13	175	50	DR	PUSH-PULL	1-200MHz	6+6	125
D5029UK	350	60	13	175	50	DR	PUSH-PULL	1-200MHz	7+7	125
D5030UK	400	50	13	175	50	DR	PUSH-PULL	1-200MHz	8+8	125
D5050UK	300	50	20	175	50	DMX	SINGLE-ENDED	1-200MHz	12	125

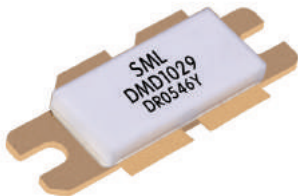
BeO FREE PACKAGING TECHNOLOGY

Device	Min. Output Power (W)	Min. Efficiency (%)	Min. Gain (dB)	Test Frequency (MHz)	Operating Voltage (V)	Package Type	Single-Ended/ Push-Pull	Application Frequency	Active FET Configuration	Breakdown Voltage (V)
DMD1006	120	50	16	175	28	D2 or A2	SINGLE-ENDED	1-200MHz	6	70
DMD1009	150	50	12	400	28	D1 or A1	PUSH-PULL	1-500MHz	4+4	70
DMD1010	125	50	13	400	28	D1 or A1	PUSH-PULL	1-500MHz	4+4	70
DMD1012	100	50	13	500	28	D1 or A1	PUSH-PULL	1-500MHz	3+3	70
DMD1020	150	50	13	400	28	D1 or A1	PUSH-PULL	1-500MHz	5+5	70
DMD1028	300	60	16	175	28	D1 or A1	PUSH-PULL	1-400MHz	6+6	70
DMD1029	350	60	16	175	28	D1 or A1	PUSH-PULL	1-400MHz	7+7	70
DMD1037	140	50	13	175	28	D2 or A2	SINGLE-ENDED	1-175MHz	7	70
DMD5010	125	60	13	400	50	D1 or A1	PUSH-PULL	1-500MHz	4+4	125
DMD5012	100	65	15	500	50	D1 or A1	PUSH-PULL	1-500MHz	3+3	125
DMD5028	300	60	20	175	50	D1 or A1	PUSH-PULL	1-400MHz	6+6	125
DMD5029	350	60	20	175	50	D1 or A1	PUSH-PULL	1-400MHz	7+7	125

New Packaging Technology

- BeO free
- Lower Thermal Impedance
- Lower Source inductance
- Higher Gain

D1 and A1 Package



D2 and A2 Package



Obsolescence Management

Fully RoHS Complaint

Thermal Stability

High Efficiency

BeO-Free

Maximum Reliability

Wide Band

Push-Pull

Low Cost

Low Feedback Capacitance

High Gain

High Performance

Single-Ended

Low Rds(on)

Ultra-High Linearity

Hermetic

High Frequency

Lower Source Inductance

Lower Thermal Impedance

To find out how we can work together on your specific application requirements contact us at power@ttelectronics.com



DLA Land and Maritime
Qualified Manufacturers
List 38535
VQC-03-003050
VQC-03-003049
Cage Code U3158



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