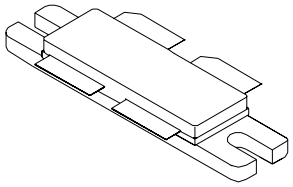
SD56120M

RF POWER TRANSISTORS
The *LdmoST* FAMILY

ADVANCE DATA

N-CHANNEL ENHANCEMENT-MODE LATERAL MOSFETs

- EXCELLENT THERMAL STABILITY
- COMMON SOURCE CONFIGURATION, PUSH-PULL
- P_{OUT} = 120 W WITH 13 dB gain @ 860 MHz /32V
- BeO FREE PACKAGE
- INTERNAL INPUT MATCHING



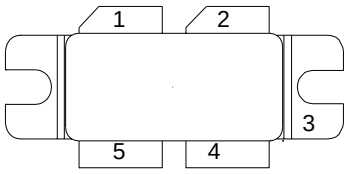
M252
epoxy sealed

ORDER CODE	BRANDING
SD56120M	TSD56120M

DESCRIPTION

The SD56120M is a common source N-Channel enhancement-mode lateral Field-Effect RF power transistor designed for broadband commercial and industrial applications at frequencies up to 1.0 GHz. The SD56120M is designed for high gain and broadband performance operating in common source mode at 32 V. Its internal matching makes it ideal for TV broadcast applications requiring high linearity.

PIN CONNECTION



1. Drain
2. Drain
3. Source
4. Gate
5. Gate

ABSOLUTE MAXIMUM RATINGS (T_{CASE} = 25°C)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-Source Voltage	65	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current	14	A
P_{DISS}	Power Dissipation (@ Tc = 70°C)	236	W
Tj	Max. Operating Junction Temperature	200	°C
T_{STG}	Storage Temperature	-65 to +150	°C

THERMAL DATA

$R_{th(j-c)}$	Junction -Case Thermal Resistance	0.55	°C/W

ELECTRICAL SPECIFICATION (T_{CASE} = 25°C)

STATIC (Per Section)

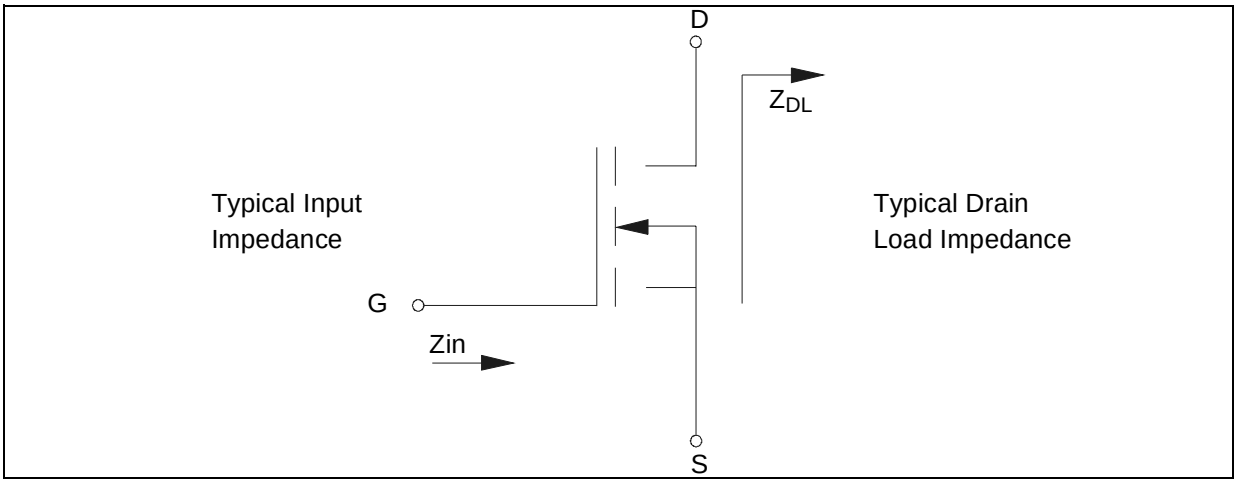
Symbol	Test Conditions			Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	V_{GS} = 0 V	I_{DS} = 10 mA		65			V
I_{DSS}	V_{GS} = 0 V	V_{DS} = 28 V				1	µA
I_{GSS}	V_{GS} = 20 V	V_{DS} = 0 V				1	µA
$V_{GS(Q)}$	V_{DS} = 28 V	I_D = 100 mA		2.0		5.0	V
$V_{DS(ON)}$	V_{GS} = 10 V	I_D = 3 A			0.7	0.8	V
G_{FS}	V_{DS} = 10 V	I_D = 3 A			3		mho
C_{ISS}*	V_{GS} = 0 V	V_{DS} = 28 V	f = 1 MHz		221		pF
C_{OSS}	V_{GS} = 0 V	V_{DS} = 28 V	f = 1 MHz		48.9		pF
C_{RSS}	V_{GS} = 0 V	V_{DS} = 28 V	f = 1 MHz		2.25		pF

* Includes Internal Input Moscap.

DYNAMIC

Symbol	Test Conditions				Min.	Typ.	Max.	Unit
P_{OUT}	V_{DD} = 32 V	I_{DQ} = 400 mA		f = 860 MHz	120			W
G_{PS}	V_{DD} = 32 V	I_{DQ} = 400 mA	P_{OUT} = 120 W	f = 860 MHz	13	16		dB
η_D	V_{DD} = 32 V	I_{DQ} = 400 mA	P_{OUT} = 120 W	f = 860 MHz	50			%
Load mismatch	V_{DD} = 32 V ALL PHASE ANGLES	I_{DQ} = 400 mA	P_{OUT} = 120 W	f = 860 MHz	10:1			VSWR

IMPEDANCE DATA

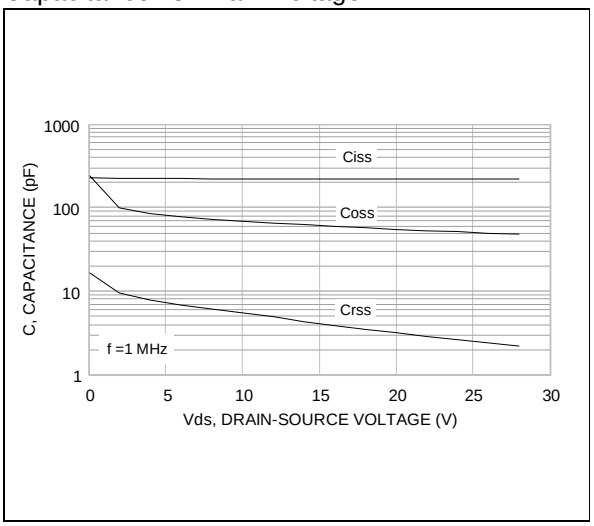


FREQ.	Z_{IN} (Ω)	Z_{DL}(Ω)
860 MHz	5.57 + j 3.488	4.21 - j 2.88

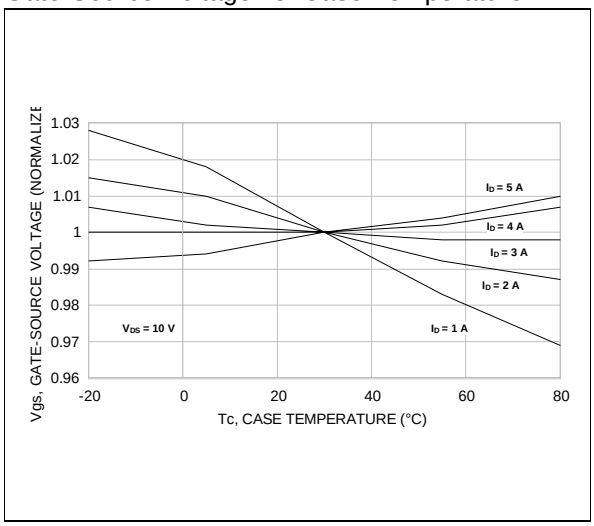
Measured drain to drain and gate to gate respectively.

TYPICAL PERFORMANCE

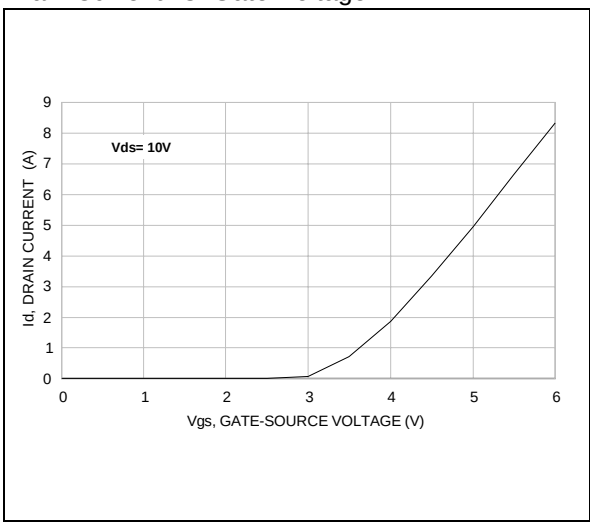
Capacitance vs. Drain Voltage



Gate-Source Voltage vs. Case Temperature

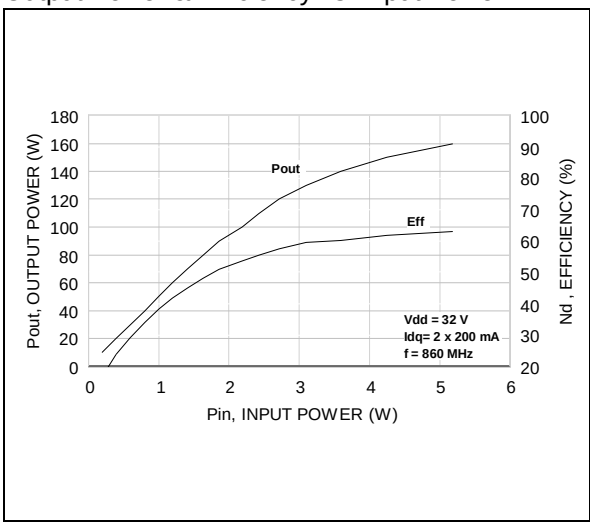


Drain Current vs. Gate Voltage

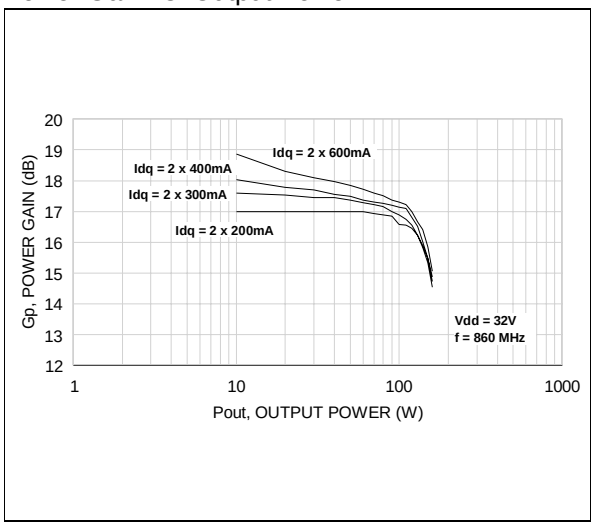


TYPICAL PERFORMANCE

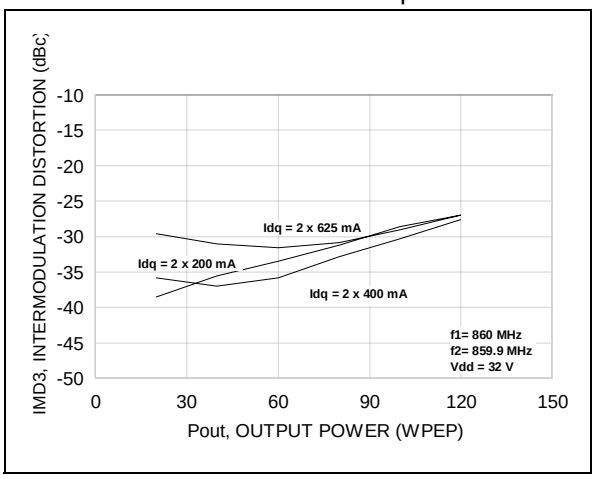
Output Power & Efficiency vs. Input Power



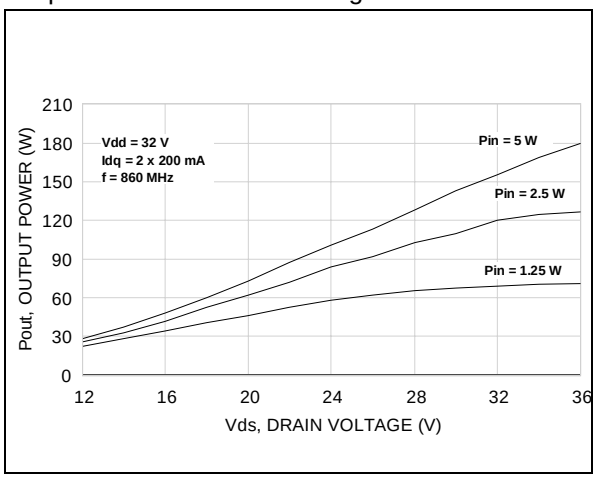
Power Gain vs. Output Power



Intermodulation Distortion vs. Output Power

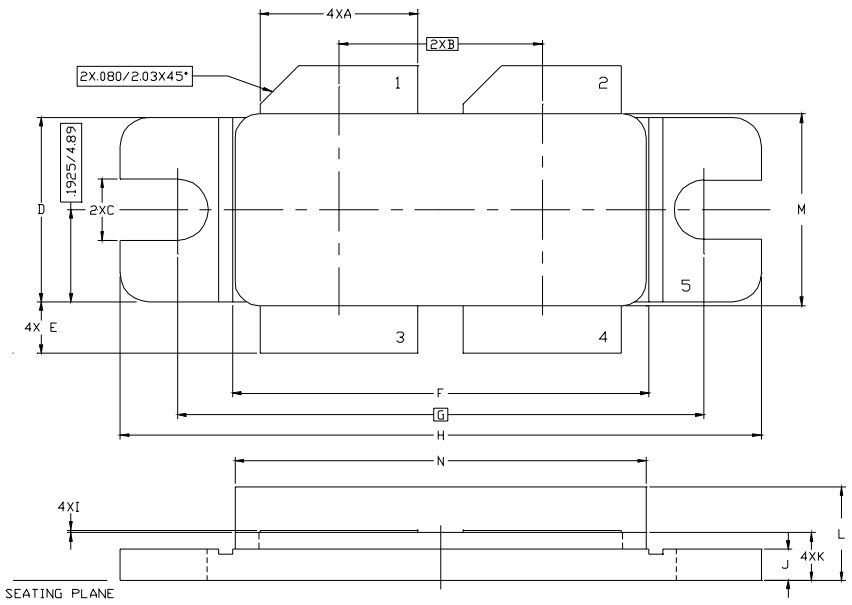


Output Power vs. Drain Voltage



M252 (.400 x .860 4L BAL N/HERM W/FLG) MECHANICAL DATA

DIM.	mm			Inch		
	MIN.	TYP.	MAX	MIN.	TYP.	MAX
A	8.13		8.64	.320		.340
B		10.80			.425	
C	3.00		3.30	.118		.130
D	9.65		9.91	.380		.390
E	2.16		2.92	.085		.115
F	21.97		22.23	.865		.875
G		27.94			1.100	
H	33.91		34.16	1.335		1.345
I	0.10		0.15	.004		.006
J	1.52		1.78	.060		.070
K	2.36		2.74	.093		.108
L	4.57		5.33	.180		.210
M	9.96		10.34	.392		.407
N	21.64		22.05	.852		.868



Controlling dimension: Inches

1022783C