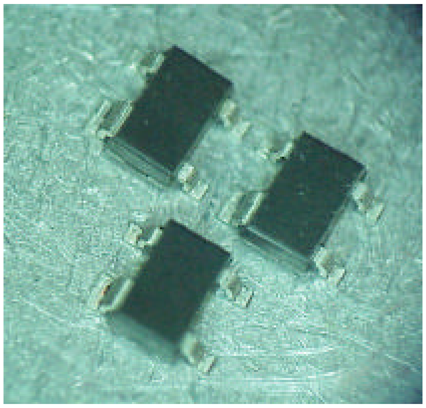
Filtronic

PRELIMINARY DATA SHEET

LPD200SOT343

PACKAGED HIGH DYNAMIC RANGE PHEMT



- **FEATURES**
  - ♦ 0.6 dB Noise Figure at 2 GHz
  - ♦ 15.5 dBm P-1dB 2 GHz, 16.5 dBm at 6 GHz
  - ♦ 21 dB Power Gain at 2 GHz, 10.5 dB at 6GHz
  - ♦ 50% Power-Added-Efficiency at 2 GHz

- **DESCRIPTION AND APPLICATIONS**

The LPD200 is an Aluminum Gallium Arsenide / Indium Gallium Arsenide (AlGaAs/InGaAs) Pseudomorphic High Electron Mobility Transistor (PHEMT), utilizing an Electron-Beam direct-write 0.25 µm by 200 µm Schottky barrier gate. The recessed “mushroom” Ti/Pt/Au gate structure minimizes parasitic gate-source and gate resistances. The epitaxial structure and processing have been optimized for high dynamic range. The LPD200’s active areas are passivated with Si_3N_4, and the SOT343 (also known as SC-70) package is ideal for low-cost, high-performance applications that require a surface-mount package.

The LPD200SOT343 is designed for commercial systems for use in low noise amplifiers and oscillators operating over the RF and Microwave frequency ranges. The low noise figure makes it appropriate for use in receivers in MMDS and GPS. This device is also suitable as a driver stage for WLAN and ISM band spread spectrum applications.

- **ELECTRICAL SPECIFICATIONS @ $T_{Ambient}$ = 25°C**

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Saturated Drain-Source Current	I_{DSS}	V_{DS} = 2 V; V_{GS} = 0 V	45		75	mA
Power at 1-dB Compression	P-1dB	f=2GHz; V_{DS} = 3 V; I_{DS} = 50% I_{DSS}	14	15.5		dBm
Power Gain at 1-dB Compression	G-1dB	f=2GHz; V_{DS} = 3 V; I_{DS} = 50% I_{DSS}	20	21		dB
Power-Added Efficiency	PAE	f=2GHz; V_{DS} = 3 V; I_{DS} = 50% I_{DSS}; P_{OUT} = 19.5 dBm		50		%
Noise Figure	NF	f=2GHz; V_{DS} = 3V; I_{DS} = 25% I_{DSS}		0.6		dB
		f=2GHz; V_{DS} = 5V; I_{DS} = 50% I_{DSS}		0.8		dB
Transconductance	G_M	V_{DS} = 2 V; V_{GS} = 0 V	50	70		mS
Gate-Source Leakage Current	I_{GSO}	V_{GS} = -5 V		1	10	µA
Pinch-Off Voltage	V_P	V_{DS} = 2 V; I_{DS} = 1 mA	-0.25		-1.5	V
Gate-Source Breakdown Voltage Magnitude	$\|V_{BDGS}\|$	I_{GS} = 1 mA	6	7		V
Gate-Drain Breakdown Voltage Magnitude	$\|V_{BDGD}\|$	I_{GD} = 1 mA	8	9		V

ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Test Conditions	Min	Max	Units
Drain-Source Voltage	V_{DS}	$T_{Ambient} = 22 \pm 3$ °C		7	V
Gate-Source Voltage	V_{GS}	$T_{Ambient} = 22 \pm 3$ °C		-3	V
Drain-Source Current	I_{DS}	$T_{Ambient} = 22 \pm 3$ °C		I_{DSS}	mA
Gate Current	I_G	$T_{Ambient} = 22 \pm 3$ °C		5	mA
RF Input Power	P_{IN}	$T_{Ambient} = 22 \pm 3$ °C		60	mW
Channel Operating Temperature	T_{CH}	$T_{Ambient} = 22 \pm 3$ °C		175	°C
Storage Temperature	T_{STG}	—	-65	175	°C

Notes: Even temporary operating conditions that exceed the Absolute Maximum Ratings could result in permanent damage to the device.

HANDLING PRECAUTIONS

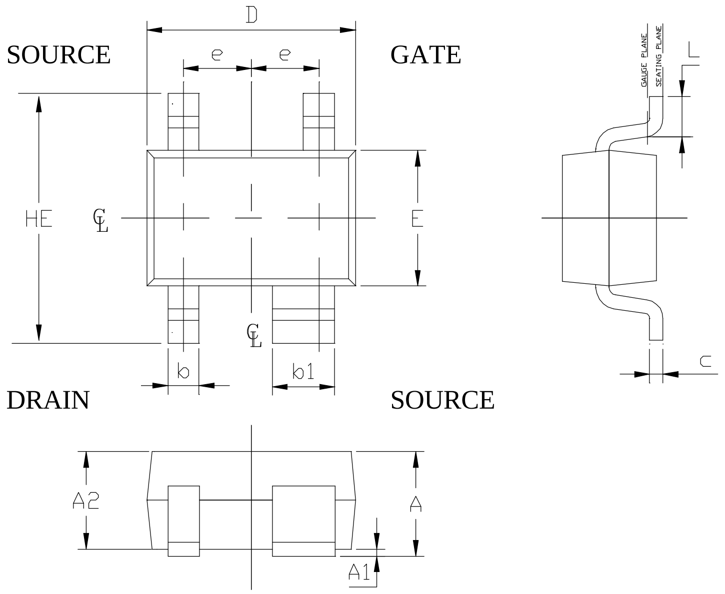
To avoid damage to the devices care should be exercised during handling. Proper Electrostatic Discharge (ESD) precautions should be observed at all stages of storage, handling, assembly, and testing. These devices should be treated as Class 1A (0-500 V). Further information on ESD control measures can be found in MIL-STD-1686 and MIL-HDBK-263.

APPLICATIONS NOTES & DESIGN DATA

Applications Notes are available from your local Filtronic Sales Representative or directly from the factory. Complete design data, including S-parameters, noise data, and large-signal models are available on the Filtronic web site.

PACKAGE OUTLINE

(dimensions in mm)



SYMBOL	MIN	MAX
E	1.15	1.35
D	1.85	2.25
HE	1.80	2.40
A	0.80	1.10
A2	0.80	1.00
A1	0.00	0.10
e	0.65 BSC	
b	0.25	0.40
b1	0.55	0.70
c	0.10	0.18
L	0.26	0.46