MC33794

Electric Field Imaging Device
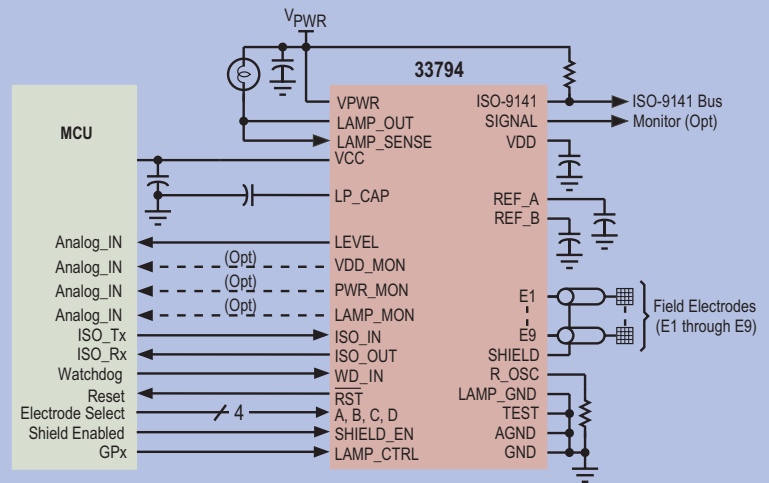
E-Field Sensing

DESCRIPTION

The 33794 is intended for applications where non-contact sensing of objects is desired. When connected to external electrodes, an electric field is created.

The 33794 is intended for use in detecting objects in this electric field. The IC generates a low-frequency sine wave. The frequency is adjustable by using an external resistor and is optimized for 120 kHz. The sine wave has very low harmonic content to reduce harmonic interference.

The 33794 also contains support circuits for a microcontroller unit (MCU) to allow the construction of a two-chip E-field system.

33794 SIMPLIFIED APPLICATION DIAGRAM

APPLICATIONS

- Object Detection and Measurement Using a Non-contact Electric Field
- Automotive, Aircraft, Marine, and Industrial Control and Safety Systems
- Proximity Detection
- Size Detection

PERFORMANCE	TYPICAL VALUES
Outputs (Regulator)	5.0 V and 8.5 V
Operating Voltage	$9.0 \text{ V} \leq V_{PWR} \leq 18 \text{ V}$
Frequency	120 kHz
ESD (HBM)	±2000 V
Operating Temperature	$-40°\text{C} \leq T_A \leq 85°\text{C}$

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FEATURES

- Supports up to 9 electrodes and 2 references
- Shield driver for driving remote electrodes through coaxial cables
- ISO-9141 physical layer interface
- Lamp driver output
- Watchdog and power-ON reset timer
- Critical internal nodes scaled and selectable for measurement
- High-purity sine wave generator tunable with external resistor
- Additional devices available for comparison in Analog Product Selector Guide (SG1002) and Automotive Selector Guide (SG187)

QUESTIONS

- Are you working with vehicular safety or sensing systems?
- Are you measuring the non-contact level or presence of liquids?
- Do you need to sense object size?
- Do you need to detect object proximity?
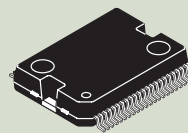- Do you need touch sensor switches?
- Do you need to detect ice?

PROTECTION	DETECT	LIMITING	SHUT DOWN	STATUS REPORTING
Overvoltage	●			●
Undervoltage	●			●
Overcurrent/ Short Circuit	●		●	
Lamp	●	●		●

CUSTOMER BENEFITS

- Simple low-cost complete E-field generation and detection system
- Support of an MCU for a two-chip solution
- Compact total system size

ORDERING INFORMATION

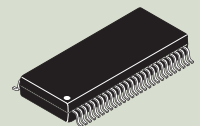| Device	Temperature Range (T$_A$)	Package
**33794DH **33794DHR2	-40°C to 85°C	44 HSOP
**33794DWB **33794DWBR2	-40°C to 85°C	54 SOICW-EP
Data Sheet Order Number		MC33794

**Prefix Index:
PC = Engineering Samples; MC = Production

Contact Sales for Evaluation Kit Availability

44 HSOP
0.65 mm Pitch
16.0 mm x 11.0 mm Body
12.2 mm x 6.9 mm Exposed Pad

54 SOICW-EP
0.65 mm Pitch
17.9 mm x 7.5 mm Body
4.6 mm x 4.6 mm Exposed Pad

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