Hitachi's HZN6.8ZMFA Surge Absorption Zener Diode in VSON-5 Ultra-thin, Small-package, Achieving Approximately 40% Reduction (Hitachi Comparison) in Surface Mount Area

— Small Package of 1.6mm × 1.6mm and Providing Both Low Capacitance and High Surge Rating Ideal for Mobile Phones and PDAs —

Tokyo, July 30, 2001— Hitachi, Ltd. (TSE: 6501) today announced the HZN6.8ZMFA surge absorption zener diode for the protection of the internal circuitry of small portable equipments such as mobile phones and PDAs from external surge voltages. The HZN6.8ZMFA is housed in the ultra-thin small package VSON-5 (Hitachi package code). Sample shipments start on July 31, 2001 in Japan.

This product features 4 devices in the newly-developed VSON-5 package of 1.6mm × 1.6mm(typ.), which provides savings of approximately 40% over its previous CMPAK-5 (Hitachi package code) in terms of mounting area and thickness. While the capacitance is small of 25pF max., it offers a high static surge rating of 25KV min. (IEC61000-4-2, Contact Discharge Test) meaning smaller equipments and circuit protection are assured.

[Background]

Small portable equipments such as mobile phones and PDAs are equipped with terminals for connection to other devices. However, surge voltages due to static, etc., from those terminals can even destroy the internal circuitry. Therefore, it is normal to use surge absorbing zener diodes inside terminals to protect the internal circuitry. Hitachi's lineup of zener diodes for absorbing surge includes products falling into two categories: low-capacitance types, which are ideal for protecting high-speed signal lines, and high surge rating products, which are ideal for power lines, which require a high surge rating.

In response to today's demand for increased miniaturization and slimmer profiles of equipment requiring high-density mounting of devices, Hitachi has developed the new HZN6.8ZMFA, which features the VSON-5 package, which, measuring 1.6mm × 1.6mm (typ.) and with a thickness of just 0.6mm (max.) is yet smaller and slimmer than its previous package in mass production, the CMPAK-5, which measures 2.0mm × 2.1mm (typ.) and has a thickness of 1.0mm (max.).

[About this Product]

The zener voltage of HZN6.8ZMFA is 6.47V to 7.00V and this product houses 4 devices in one package. By reducing the chip thickness, it has been possible to use the newly-developed VSON-5 pakage, providing 40% savings over the CMPAK-5 in terms of both surface mounting area and product thickness. This, in turn, allows the equipment to be smaller and slimmer.

The HZN6.8ZMFA provides both low capacitance (less than 25pF at VR=0V and less than 10pF at VR=5V) and high surge rating (25KV min. as defined in IEC61000-4-2, "Contact Discharge"), improving system design flexibility.

This product is available in embossed taping format, which is ideal for automatic mounting.

In future, Hitachi is to develop a single-device UFP package (Hitachi package code. External size: 1.6mm × 0.8mm (typ.)), providing increased mounting freedom.

< Typical Applications >

Small portable equipment such as mobile phones, notebook PCs, PDAs, digital still cameras, etc.

< Prices in Japan > (**For Reference**)

Part Number	Sample Unit Price (Yen)
HZN6.8ZMFA	10

< Specifications >

1. Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Value	Unit
Power dissipation*[1]	Pd	150	mW
Junction temperature	Tj	150	°C
Storage temperature	Tstg	- 55 to + 150	°C

Note: *1 Value with 4 devices, mounted on PCB

2. Electrical Characteristics*[1] (Ta = 25°C)

Item	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Zener voltage	Vz	6.47	–	7.00	V	Iz = 5 mA, 40 ms pulse measurement
Dynamic resistance	rd	–	–	30	Ω	Iz = 5 mA
Reverse current	IR	–	–	0.5	μA	VR = 3.5 V
Capacitance between terminals	Cd	–	–	25	pF	VR = 0 V, f = 1MHz
ESD-Capability*[2]	–	25	–	–	KV	C = 150pF, R = 330 Ω, 10 forward and reverse cycles applied

Note: *1 Value for 1 device

*2 Failure criterion IR > 0.5 μA (VR = 3.5 V)