



Charger Protection IC with Internal FET BD6040GUL

● Outline

The BD6040GUL charger protection IC developed for portable devices provides up to 28V of over voltage protection for charger ICs. Built-in circuits include overvoltage lockout, overcurrent limit, undervoltage protection, internal start up delay, and status flag.

● Features

- 1) 28V (max) overvoltage protection
- 2) Low quiescent current (45μA)
- 3) Low Ron (125mΩ) FET
- 4) Overvoltage lockout (OVLO) circuit
- 5) Undervoltage lockout (UVLO) circuit
- 6) Internal 2msec start up delay
- 7) Overcurrent protection circuit
- 8) Compact package: VCSP50L1 (1.6mm x 1.6mm, t=0.55mm)

● Applications

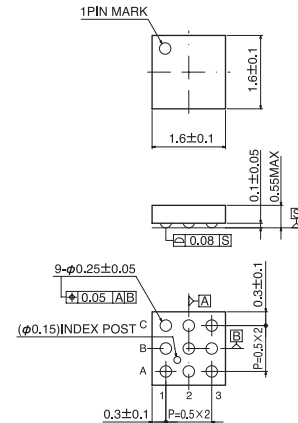
Mobile phones, MP3 players, digital cameras

● Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	Conditions
Input Supply Voltage 1	Vmax1	-0.3 to 30	V	IN
Input Supply Voltage 2	Vmax2	-0.3 to 7	V	other
Power Dissipation	Pd	725	mW	
Operating Temperature Range	Topr	-35 to +85	°C	
Storage Temperature Range	Tstr	-55 to +150	°C	

*1: Derated at 5.8mW/1°C at Ta greater than 25°C. When mounted on 50mm×58mm board.

● Dimensions (Unit:mm)



VCSP50L1

- The specifications for the product described in this document are for reference only. Upon actual use, therefore, please request that specifications to be separately delivered.
- The application circuit examples, information, and various data pertaining to the use of the products presented in this documentation are provided for reference purposes only.
- Please note that ROHM cannot bear any responsibility regarding any problems relating to industrial property rights resulting from their use thereof.

The products listed in this catalog are designed to be used with ordinary electronic equipment or devices (such as audio visual equipment, office-automation equipment, communications devices, electrical appliances and electronic toys).

Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), please be sure to consult with our sales representative in advance.

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Current specifications in effect of 1st. October 2007.



• **Recommended Operating Range** ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Input Voltage Range	V_{in}	2.2	5	28	V

• **Electrical Characteristics** ($T_a=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
ELECTRICAL						
Input Voltage Range	V_{IN}	-	-	28	V	
Supply Quiescent Current	I_{CC}	-	45	90	μA	
Undervoltage Lockout	UVLO	2.53	2.65	2.77	V	$I_N=\text{decreasing}$
Undervoltage Lockout Hysteresis	UVLOh	50	100	150	mV	$I_N=\text{increasing}$
Overvoltage Lockout	OVLO	6.2	6.4	6.6	V	$I_N=\text{increasing}$
Overvoltage Lockout Hysteresis	OVLOh	10	30	50	mV	$I_N=\text{decreasing}$
Current Limit	ILM	1.2	-	-	A	
V_{in} Vs. V_{out} Res.	R_{ON}	-	125	150	$\text{m}\Omega$	
OK Output Low Voltage	OKVO	-	-	400	mV	SINK=1mA
OK Leakage Current	OKleak	-	-	1	μA	
EN Input Voltage (H)	ENH	1.45	-	-	V	
EN Input Voltage (L)	ENL	-	-	0.5	V	
EN Input Current	ENC	12	25	50	μA	EN=1.5V
TIMING						
Startup Delay	T_{on}	-	2	4	ms	
OK Rise Delay	T_{ok}	-	10	15	ms	
Output Turn Off Time	T_{off}	-	2	10	μs	
Alert Delay	T_{ovp}	-	1.5	10	μs	

* This product is not designed to be resistant to radiation.

• **Block Diagram**

