Terms and Symbols

■ Absolute Maximum Ratings

Term	Symbol	Definition
DC input voltage	V_{in}	Maximum DC input voltage applied across input terminals
ON/OFF control terminal voltage	V_c	Maximum allowable voltage applied to ON/OFF control terminal
Output current	I_O	Maximum allowable output current which can be fed continuously to output terminals (in case of resistance load)
Power dissipation	P_D	Maximum power consumption which can be applied to a device. There are two types, namely no heat sink (P_{D1}) and with infinite heat sink (P_{D2}).
Junction temperature	T_j	Maximum junction temperature allowable during operation of a device
Operating temperature	T_{opr}	Ambient temperature range ensuring normal function of a device
Storage temperature	T_{stg}	Ambient temperature range where deterioration of characteristic and reduction of reliability do not occur during long term holding withnut input to a device
Soldering temperature	T_{sol}	Maximum temperature allowable in soldering. Required condition is time setting.
Reset output applicable voltage	V_r	Maximum rating applicable to reset signal output terminal
output minute adjustment terminal voltage or output adjustment terminal voltage	V_{adj}	Maximum rating applicable to output voltage adjusting terminal
Input-output reverse voltage	V_{O-i}	Maximum reverse voltage between input and output
Bias supply voltage	V_B	Maximum DC input voltage between bias supply voltage and GND terminal
※ Error input voltage	V_{adj}	Maximum voltage between oadj and COM terminal
※ Input-output voltage	V_i (1	Maximum voltage between Vin and V_{OUT}
※Output-COM voltage	V_{OUT}	Maximum reverse voltage applicable to V_{OUT} terminal against COM terminal
※ON/OFF control voltage	V,	Maximum voltage between ON/OFF and COM terminal
※ Switching current	I_{SW}	Maximum peak current between Vin and V_{OUT}
*Drain-GND (source) voltage	V_{DS}	Maximum DC input voltage between drain and GND terminal
*Drain current	In	Maximum allowable output current which can be fed continuously between drain and GND (Source)
* FB terminal input voltage	V_{FB}	Maximum DC voltage between FB terminal and GND (Source)
* CA terminal input current	I_{CA}	Maximum allowable current which can be fed continuously between CA terminal and GND (Source)

■ Electrical Characteristics

Term	Symbol	Definition
Output voltage	VU	Voltage applied across output terminals
Load regulation	RegL	Represents the fluctuation of output voltage with respect to fluctuation of load current. When the load current changes from I_{O1} to I_{O2}, and the output voltage changes from V_{O1} to V_{O2}, the RegL is expressed as follows: $\text{RegL} = \frac{\lvert V_{O1} - V_{O2} \rvert}{V_{O,}} \times 100\,(\%)$
Line regulation	RegI	Represents the fluctuation of output voltage when the OC input voltage V,. changes When the DC input voltage changes from V_{in1} to V_{in2}, and the output voltage changes frum V_{O1} to V_{O2}, RegI is expressed as follows: $\text{RegI} = \frac{\lvert V_{O1} - V_{O2} \rvert}{V_{O1}} \times 100\,(\%)$
Temperature coefficient of output voltage	T_cV_o	Represents the fluctuation of output voltage when the device junction temperature changes. When the device junction temperature changes from T_{j1} to T_{j2}, and the output voltage changes from $V_{u\,1}$ to V_{O2}, T, V_o is expressed as follows: $T_cV_o = \frac{(V_{O2} - V_{O1})}{V_o(T_j=25^\circ C)} \times \frac{1}{T_{j2} - T_{j1}} \times 100\,(\%/^\circ C)$

■ Electrical Characteristics

Term	Symbol	Definition
Ripple rejection	RR	Rate of reduction of AC voltage superposed on output voltage against input AC voltage when the AC sine voltage (frequency of 120 Hz, voltage of 0.5 V_{rms}) is superposed on the specified DC input voltage V_{in} Assuming that e_i (V_{rms}) and e_o (V_{rms}) express the input AC wave component and output AC wave component, respectively, RR is represented by the following formula; $RR = 20 \times \log \frac{e_i}{e_o}$ (dB)
Dropout voltage	V_{i-o}	This represents the difference between DC input voltage V_{in} required for normal operation of a device and output voltage V_O. Assuming that V_{in1} and V_{O1} are DC input voltage and output voltage, respectively, in the case when Vin is lowered and V_O lowers by 5% below normal value (V_O at specified V,.), V_{i-o} is represented by the following formula $V_{i-o} = V_{in1} - V_{O1}$ (V)
ON-state voltage for control	$V_{C(ON)}$	Output control voltage V_C which must be applied between ON/OFF control terminal and GND which is necessary fur normal output voltage V_O Note: Even when the ON/OFF control terminal is opened, the output voltage is ON-state. (except PQ05RA series, PQ05SZ series, PQ05TZ series)
ON-state current for control	$I_{C(ON)}$	Current which flows into the ON/OFF control terminal when the specified ON control voltage is applied to the ON/OFF control terminal.
OFF-state voltage for control	$V_{C(OFF)}$	Output control voltage Vc which must be applied between ON/OFF control terminal and GND which is necessary to turn off
OFF-state current for control	$I_{C(OFF)}$	Current which flows out from the ON/OFF control terminal when the specified output OFF control voltage is applied to the ON/OFF control terminal
Output voltage minute adjustment	$V_{o(adj)}$	Adjustable range of output voltage (V_O)
Reference voltage	V_{ref}	Voltage between output minute adjustment terminal and GND, voltage between output adjustment terminal and C, ND.
Temperature coefficient of reference voltage	T_cV_{ref}	Represents the fluctuation of reference voltage when the device junction temperature changes. When the device junction temperature changes from T_{j1} to T_{j2}, and reference voltage changes from V_{ref1} to V_{ref2}, T_cV_{ref} is expressed the following formula: $T_cVref = \frac{V_{ref2} - V_{ref1}}{V_{ref}(T_j=25℃)} \times \frac{100}{T_{j2} - T_{j1}}$ (%/℃)
"Low" reset output voltage	V_{rl}	Voltage between reset output and GND when reset signal is active and freed current is applied between reset output and GND.
Reset threshold voltage	V_{rt}	Output voltage when reset output is active (low), turning down the output voltage (VO).
Reset output leak current	I_{rlk}	Current into reset output terminal when specified voltage is applied between reset output and GND.
Quiescent current	I_q	Consumption current which flows out from the GND terminal when the specified input voltage is applied between V_{in} and GND in no load state
Output OFF-state consumption current	I_{qs}	Consumption current which flows out from the GND ternimal when the ON/OFF control terminal is turned off and the specified input voltage is applied between Vin and GND
Bias inflow current	I_B	Current which flows info bias power supply terminal when the specified load, input voltage, and bias power supply voltage are applied.
Bias limitation current	$I_{B(\ell)}$	Maximum current which flows into bias power supply terminal within a rating.
Ground current	I_g	Dissipation current which flows out from the GND terminal when no load, specified input voltage, and bias power supply voltage are applied.
OFF-state bias power supply voltage	$V_{B(OFF)}$	Bias power supply voltage (V_B) which should be applied to bias power supply terminal which is nesessary to turn off output.
Overheat shut-down temperature	T_{sd}	Device temperature to shut down output voltage (V_O).
※ Output saturation voltage	$V_{(sat)}$	Voltage between V,. and V_{out} when output transistor is ON.
※ Efficiency	η	Efficiency $\eta = \frac{V_O \times I_O}{V_{in} \times I_{in}}$ X 100 (%)

Term	Symbol	Definition
X,* Oscillation frequency	f_O	Oscillation frequency within a built-in oscillator
※, * Maximum duty	D_{MAX}	Maximum ratio of power ON within a cycle
X,* Overcurrent detecting level	I_L	Rate of switching current which begins to limit pulse width of TON (time which output transistor keeps ON).
X,* Charge current	I_{CHG}	Current which flows into ON/OFF control terminal.
※ Input threshold voltage	V_{THL}	Threshold voltage which should be applied between ON/OFF control terminal and COM in order to attain the condition, Duty=0%.
	V_{THH}	Threshold voltage which should be applied between ON/OFF control terminal and COM in order to attain the condition, Duty=MAX. duty.
※ ON threshold voltage	$V_{TH(ON)}$	Threshold voltage which should be applied between ON/OFF control terminal and COM in order to attain the condition below, Consumption current=MAX. 400 μA (stand-by current)
X,* Stand-by current	I_{SD}	Consumption current which flows into Vin when ON/OFF terminal is below $V_{TH(ON)}$
* Drain-source onstate resistance	$R_{DS(ON)}$	Drain-to-GND (Source) voltage when specified Drain current is applied during specified switching operation
* Drain-source leakage current	I_{DSS}	Drain current when specified Drain-to-GND (Source) voltage is applied, and switching operation is in OFF-state
* FB thershold voltage	V_{FBL}	Threshold voltage which should be applied between FB terminal and GND in order to attain the condition, Duty=0%.
	V_{FBH}	Threshold voltage which should be applied between FB terminal and GND in order to attain the condition, Duty=MAX. duty.
	$V_{FB(OCP)}$	Rate of voltage which begins to recharge capacitor CA, between CA terminal and GND
* FB current	I_{FB}	Current which flows between FB-terminal and GND when V_{FB}=GND
* CA threshold voltage	V_{CAL}	Threshold voltage which should be applied between CA terminal and GND in order to attain the condition, Duty=0%.
	V_{CAH}	Threshold voltage which should be applied between CA terminal and GND in order to attain tbe condition, Duty=MAX. duty.
	$V_{CA(ON/OFF)}$	Threshold voltage which should be applied between CA terminal and GND in order to attain the condition below, Consumption current=MAX. 1.8mA (Output OFF-state consumption current).
	$V_{CA(OVP)}$	Threshold voltage which should be applied between CA terminal and GND which is nesessary to shut-down switching operation.
* CA sink current	I_{CAIN}	Current which flows in CA terminal at the specified condition. Current over I_{CAIN} is nesessary to recharge capacitor CA, between CA terminal and GND for overvoltage protection.
* Operation starting voltage	$V_{CC(ON)}$	Voltage which turns on IC operation when power supply voltage becomes HIGH from LOW.
* operation stopping voltage	$V_{CC(OFF)}$	Voltage which shuts down IC operation when power supply voltage becomes LOW from HIGH.

※ Applicable to chopper regulator

* Applicable to primary regulator