

LOW DROPOUT VOLTAGE REGULATOR

■ GENERAL DESCRIPTION

NJU7771/72/73/74/75/76 is a low dropout voltage regulator designed for cellular phone application etc.

Advanced CMOS technology achieves high ripple rejection and low quiescent current.

When the ON/OFF control is used, NJU7774/75/76 has high transition response characteristics for shunt switch.

■ FEATURES

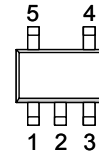
- High Ripple Rejection 65dB typ. (f=1kHz, Vo=3.0V version)
- Low quiescent Current Iq=18μA (Io=0mA)
- Output capacitor with 1.0μF ceramic capacitor (Vo≤2.0V version)
- Output Current Io(max.)=150mA
- High Precision Output Vo±1.0%
- Low Dropout Voltage 0.15V typ. (Io=100mA, Vo=3.0V)
- Input Voltage Range VIN=+2.3V~14V (Vo≤2.0V version)
- ON/OFF Control (Active High)
- With Shunt Switch Only NJU7774/75/76
- Internal Short Circuit Current Limit
- Internal Thermal Overload Protection
- CMOS Technology
- Package Outline SOT-23-5 (MTP5)

■ PACKAGE OUTLINE



NJU777*F

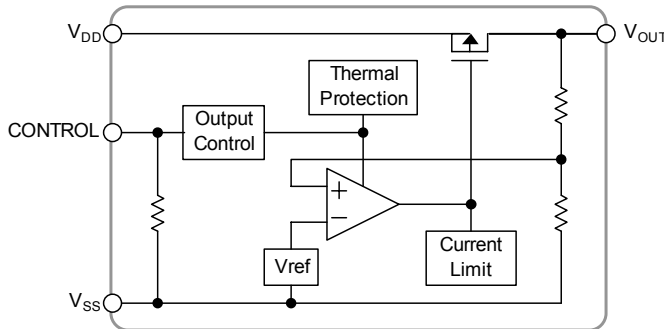
■ PIN CONFIGURATION



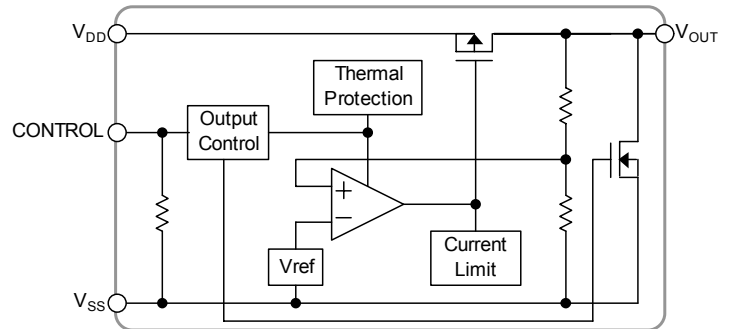
PIN FUNCTION

1.CONTROL	1.V _{IN}	1.V _{OUT}
2.GND	2.GND	2.GND
3.NC	3.CONTROL	3.V _{IN}
4.V _{OUT}	4.NC	4.CONTROL
5.V _{IN}	5.V _{OUT}	5.NC
NJU7771F	NJU7772F	NJU7773F
NJU7774F	NJU7775F	NJU7776F

■ EQUIVALENT CIRCUIT



NJM7771/72/73



NJM7774/75/76

■ OUTPUT VOLTAGE RANK LIST

Device Name	V _{OUT}	Device Name	V _{OUT}	Device Name	V _{OUT}
NJU777×F15	1.5V	NJU777×F27	2.7V	NJU777×F38	3.8V
NJU777×F21	2.1V	NJU777×F28	2.8V	NJU777×F05	5.0V
NJU777×F22	2.2V	NJU777×F03	3.0V		
NJU777×F23	2.3V	NJU777×F33	3.3V		
NJU777×F25	2.5V	NJU777×F35	3.5V		

NJU7771/72/73/74/75/76

■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Input Voltage	V_{IN}	+10	V
Control Voltage	V_{CONT}	+10(*note 1)	V
Power Dissipation	P_D	200	mW
Operating Temperature	T_{opr}	-40 ~ +85	°C
Storage Temperature	T_{stg}	-40 ~ +125	°C
OFF-state Output Sink Current(*note2)	I_o	10	mA

(*note 1): When input voltage is less than +10V, the absolute maximum control voltage is equal to the input voltage.

(*note 2): This maximum rating is applied to NJU7774/75/76.

■ ELECTRICAL CHARACTERISTICS

($V_{IN}=V_o+1V$, $C_{IN}=0.1\mu F$, $C_o=1.0\mu F$ ($C_o=2.2\mu F$: $V_o\leq 2.0V$), $T_a=25^\circ C$)

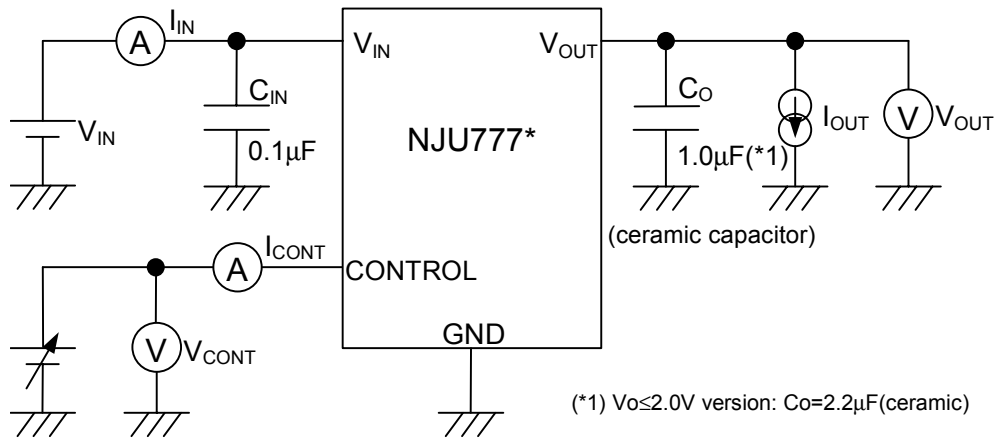
PARAMETER	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Output Voltage	V_o	$I_o=30mA$	-1.0%	-	+1.0%	V
Input Voltage	V_{IN}		2	V_o+1V	9	V
Quiescent Current	I_Q	$I_o=0mA$, $V_{CONT}=V_{IN}$	-	18	35	μA
Quiescent Current at Control OFF	$I_{Q(OFF)}$	$V_{CONT}=0V$	-	0.1	1	μA
Output Current	I_o	$V_o-0.1V$ ($V_o\leq 2.0V$) $V_o-0.3V$ ($V_o\geq 2.1V$)	150	-	-	mA
Short Current Limit	I_{LIM}	$V_o=0V$	30	50	110	mA
Line Regulation	$\Delta V_o/\Delta V_{IN}$	$V_{IN}=V_o+1V \sim V_o+6.0V$ ($V_o<3.0V$) $V_{IN}=V_o+1V \sim 9.0V$ ($V_o\geq 3.0V$), $I_o=30mA$	-	-	0.20	%/V
Load Regulation	$\Delta V_o/\Delta I_o$	$I_o=0 \sim 100mA$	-	-	0.03	%/mA
Dropout Voltage(*note 3)	ΔV_{I-O}	$I_o=100mA$, $2.1V\leq V_o\leq 2.4V$	-	0.2	0.3	V
		$I_o=100mA$, $2.5V\leq V_o\leq 2.7V$	-	0.18	0.28	V
		$I_o=100mA$, $2.8V\leq V_o\leq 3.3V$	-	0.15	0.25	V
		$I_o=100mA$, $3.4V\leq V_o\leq 5.0V$	-	0.12	0.22	V
Ripple Rejection	RR	$e_{in}=200mV_{rms}$, $f=1kHz$, $I_o=10mA$, $V_o=3.0V$ Version	-	65	-	dB
Average Temperature Coefficient of Output Voltage	$\Delta V_o/\Delta T_a$	$T_a=0 \sim 85^\circ C$, $I_o=10mA$	-	± 100	-	ppm/°C
Output Noise Voltage	V_{NO1}	$f=10Hz \sim 80kHz$, $I_o=0mA$, $V_o=3.0V$ Version	-	40	-	μV_{rms}
	V_{NO2}	$f=10Hz \sim 80kHz$, $I_o=10mA$, $V_o=3.0V$ Version	-	70	-	μV_{rms}
Pull-down Resistance	R_{CONT}		2.5	5	10	$M\Omega$
Control Voltage for ON-state	$V_{CONT(ON)}$		1.6	-	-	V
Control Voltage for OFF-state	$V_{CONT(OFF)}$		0	-	0.3	V

(*note 3): Except output voltage less than 2.1V.

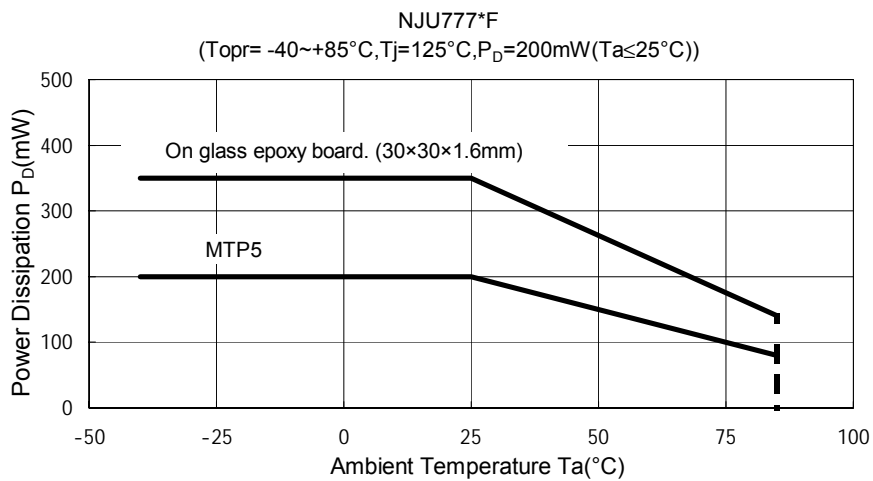
(*note 4): The above specification is a common specification for all output voltages.

Therefore, it may be different from the individual specification for a specific output voltage.

■ TEST CIRCUIT



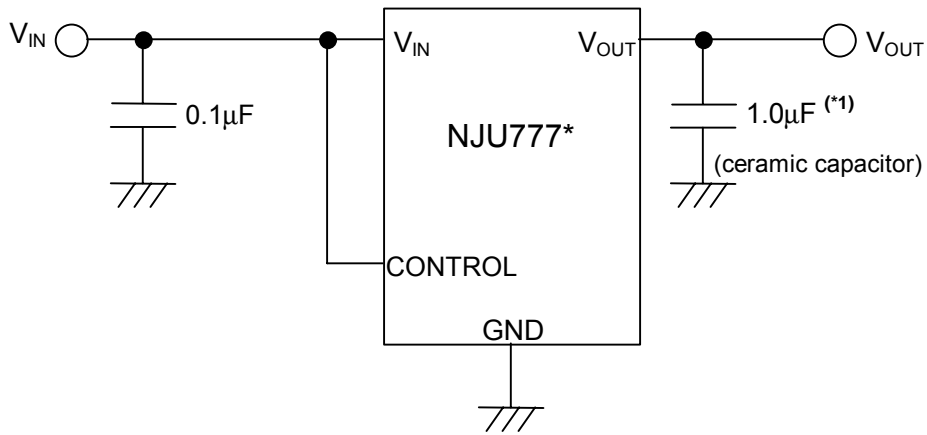
■ POWER DISSIPATION vs. AMBIENT TEMPERATURE



NJU7771/72/73/74/75/76

■ TYPICAL APPLICATION

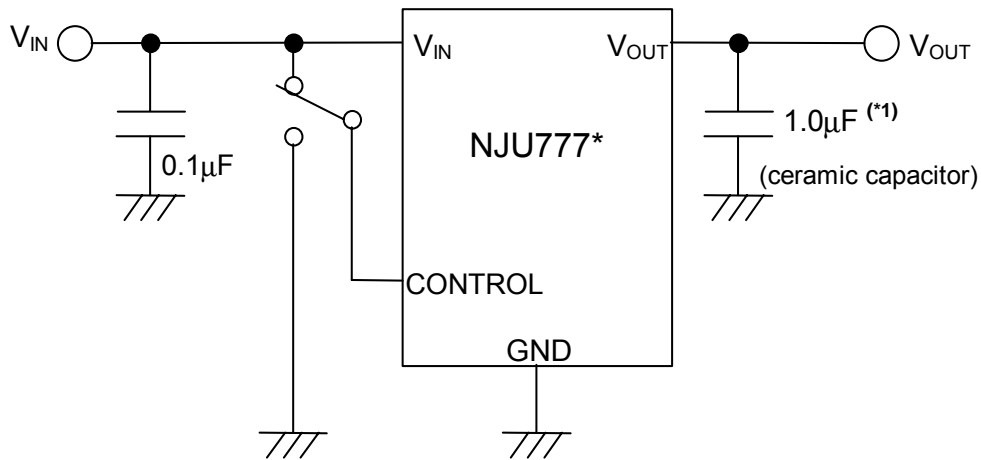
① In case that ON/OFF Control is not required:



(*1) $V_o \leq 2.0\text{V}$ version: $C_o = 2.2\mu\text{F}$ (ceramic)

Connect control terminal to V_{IN} terminal.

② In use of ON/OFF Control

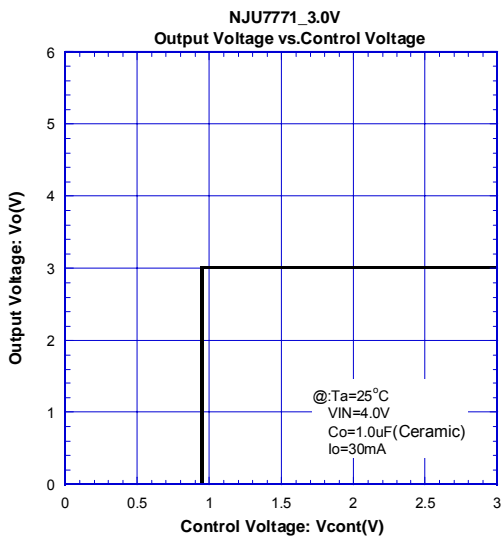
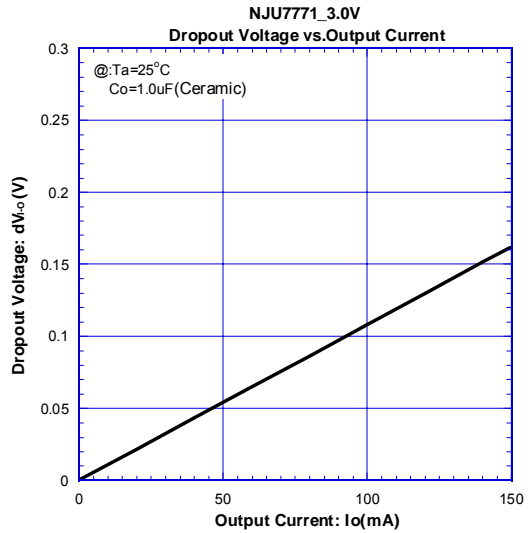
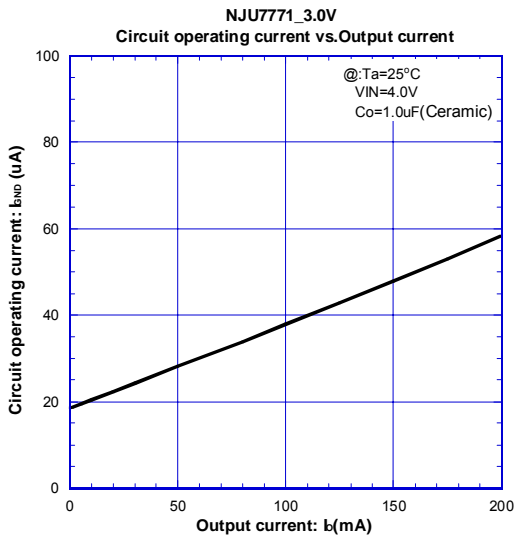
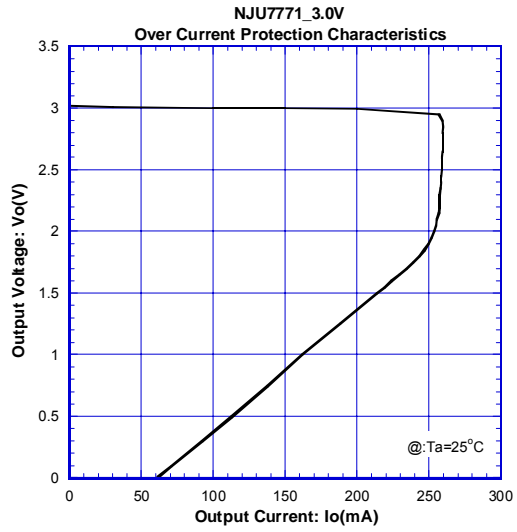
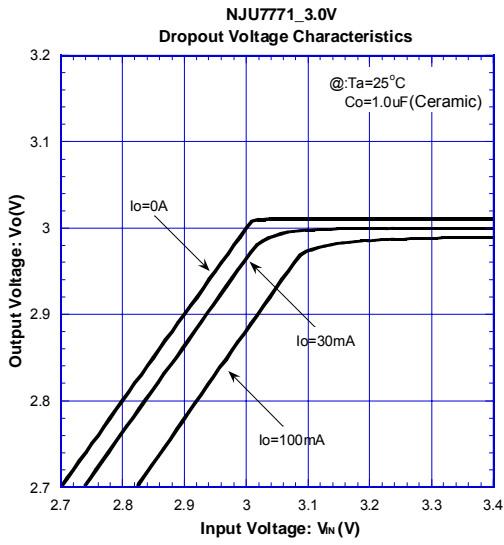


(*1) $V_o \leq 2.0\text{V}$ version: $C_o = 2.2\mu\text{F}$ (ceramic)

State of control terminal:

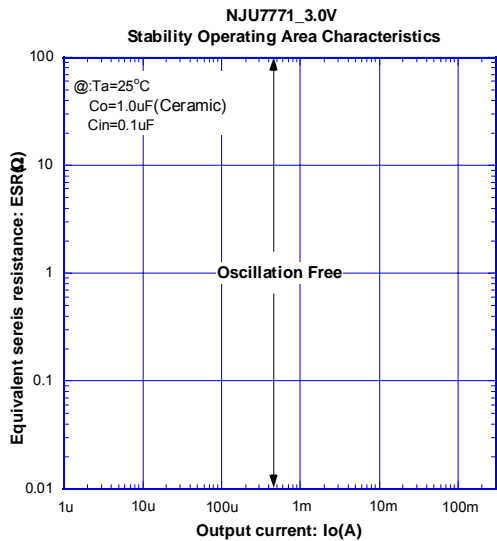
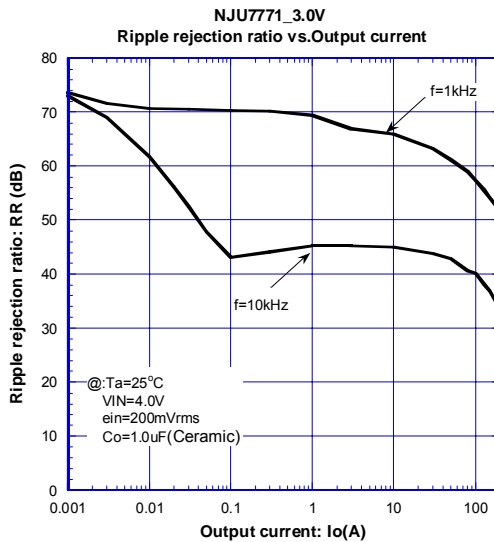
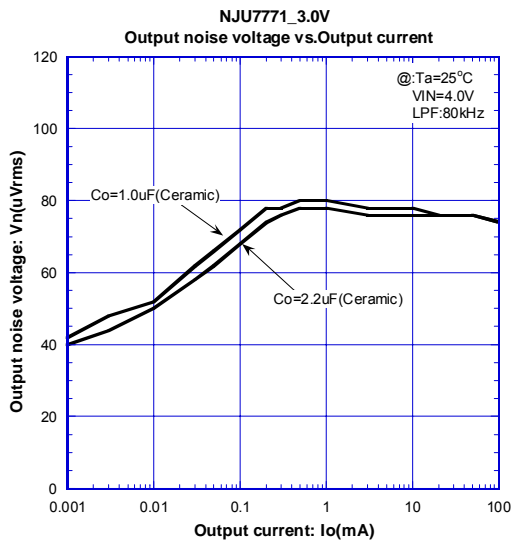
- "H" → output is enabled.
- "L" or "open" → output is disabled.

ELECTRICAL CHARACTERISTICS

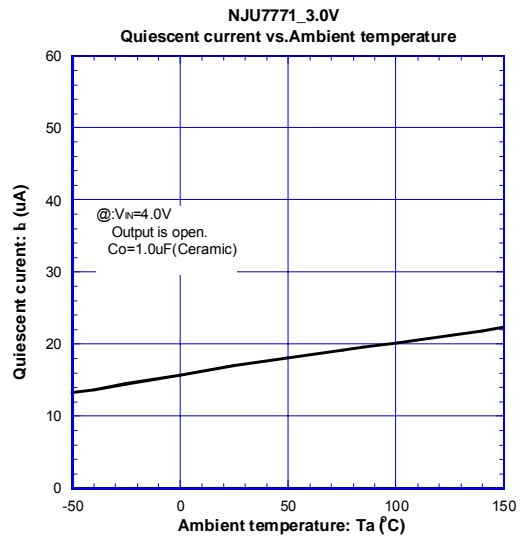
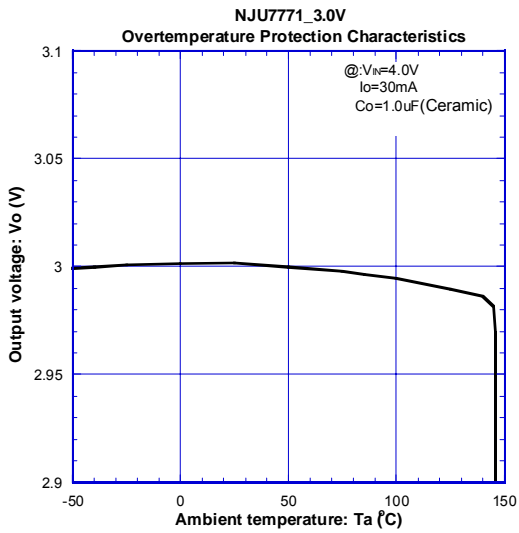
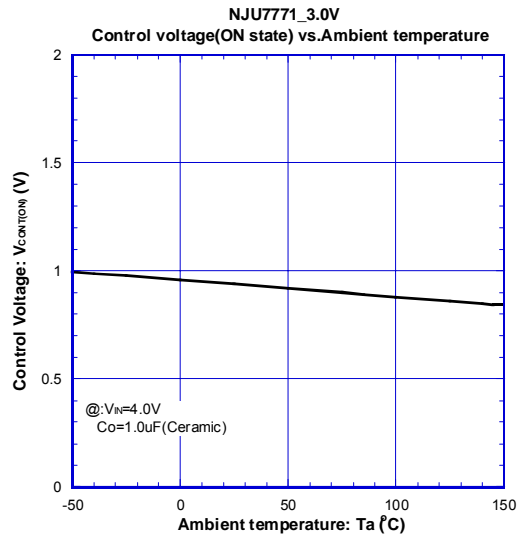
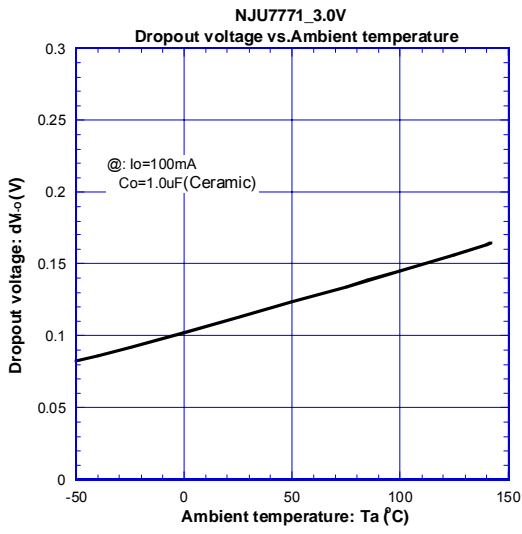


NJU7771/72/73/74/75/76

ELECTRICAL CHARACTERISTICS



ELECTRICAL CHARACTERISTICS



[CAUTION]

The specifications on this databook are only given for information, without any guarantee as regards either mistakes or omissions. The application circuits in this databook are described only to show representative usages of the product and not intended for the guarantee or permission of any right including the industrial rights.