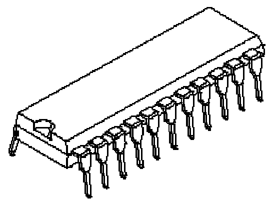
DUAL H BRIDGE DRIVER

■ GENERAL DESCRIPTION

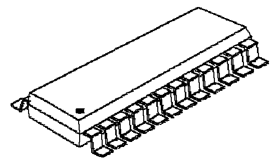
The NJM2670 is a general-purpose 60V dual H-bridge drive IC. It consists of a pair of H-bridges, a thermal shut down circuit and its alarm output. The alarm output can detect application problems and the system reliability will be significantly improved if monitored by Micro Processor.

Therefore, it is suitable for two-phase stepper motor application driven by microprocessor.

■ PACKAGE OUTLINE



NJM2670D2

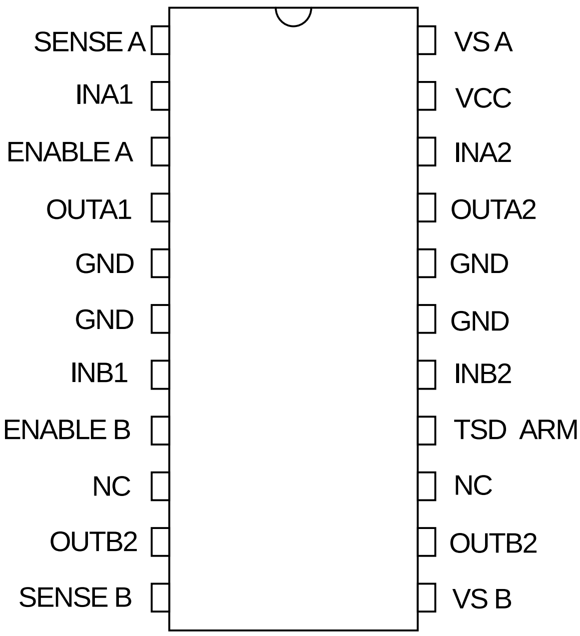


NJM2670E3

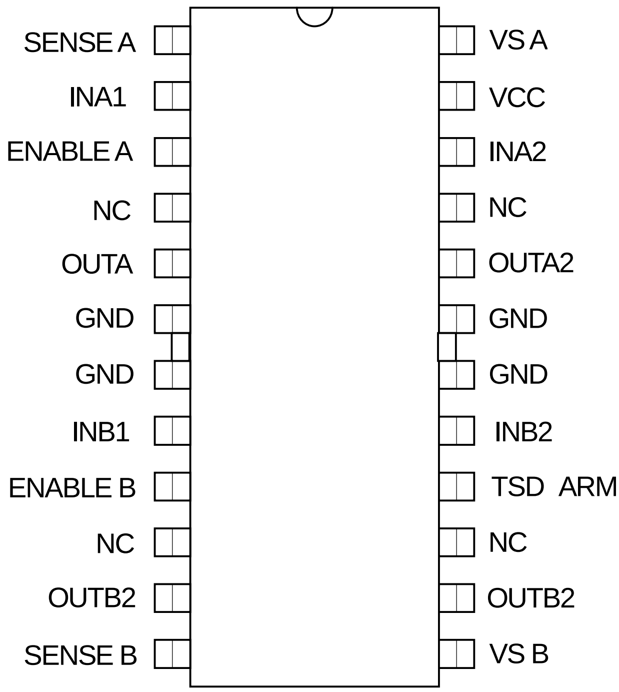
■ FEATURES

- Wide Voltage Range (4V to 60V)
- Wide Range of Current Control (5 to 1500mA)
- Thermal overload Protection
- Package Outline (DIP-22, EMP-24)

■ PIN CONNECTION

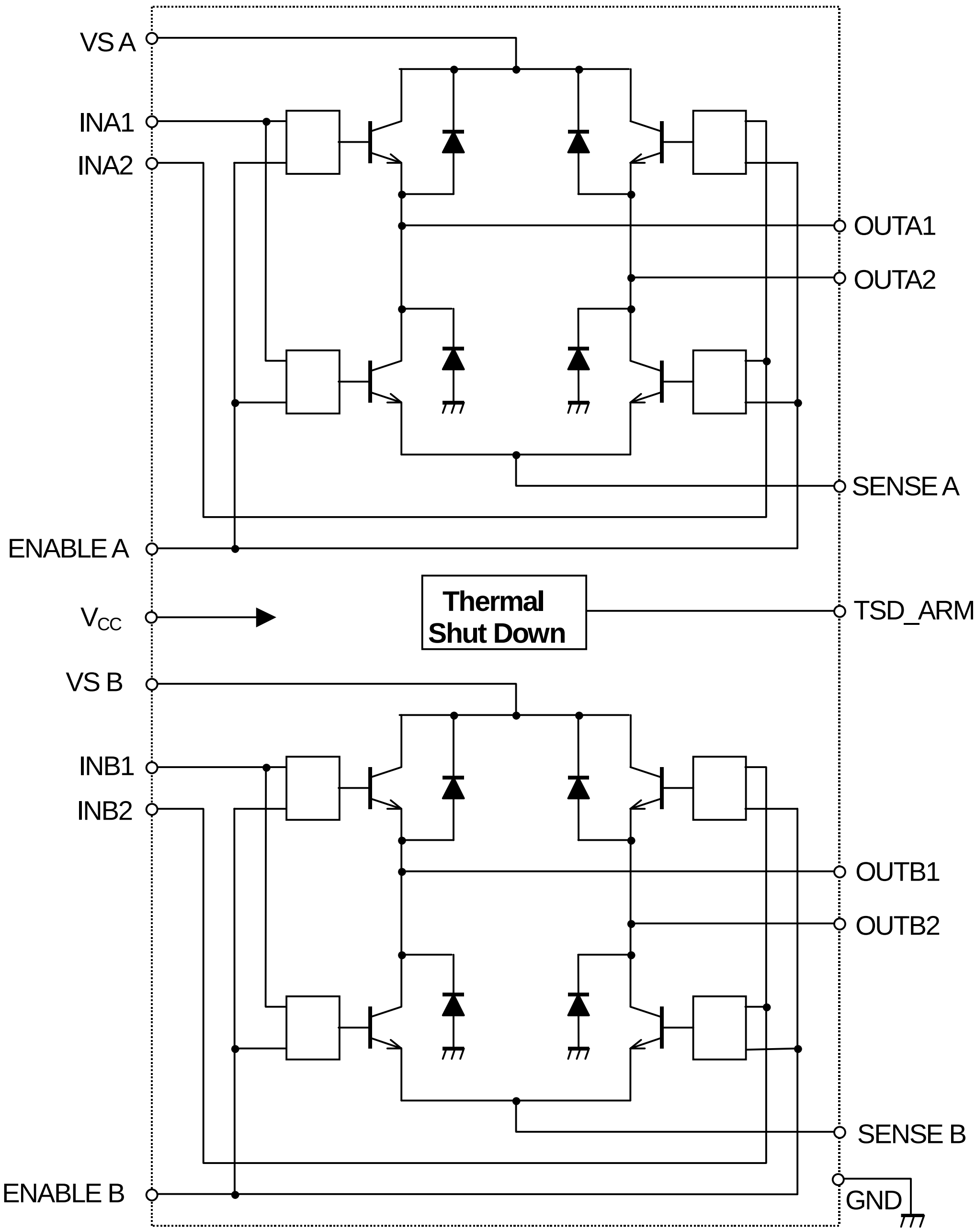


DIP-22



EMP-24

■BLOCK DIAGRAM



■ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

PARAMETER	SYMBOL	RATINGS	UNIT
Maximum Supply Voltage	V_{MM}	60	V
Logic Supply Voltage	V_{CC}	7	V
Input Voltage Range	V_{IN}	-0.3 to 7	V
Output Current	I_{OUT}	1.5	A
Power Dissipation@T(GND)=25°C	P_{D25}	5	W
Power Dissipation@T(GND)=125°C	P_{D125}	2	W
Operating Junction Temperature	Topr	-40 ~ 85	°C
Storage Temperature	Tstg	-55 ~ 150	°C

■RECOMENNDO OPERATING CONDITIONS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{MM}		4	-	55	V
Logic Voltage Range	V_{CC}		4.75	5.00	5.25	V
Maximum Output Current	I_{OUT}		-	-	1.3	A
Total Power Dissipation	P_D	T_{GND}=25°C	-	-	5	W
	P_D	T_{GND}=125°C	-	-	2.2	W

■THERMAL CHARACTERISTICS

PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Thermal resistance	$Rth_{j\text{-}GND}$	DIP22 package.	-	11	-	°C/W
	$Rth_{j\text{-}A}$	DIP22 package. Note	-	40	-	°C/W
	$Rth_{j\text{-}GND}$	EMP24 package.	-	13	-	°C/W
	$Rth_{j\text{-}A}$	EMP24 package. Note	-	42	-	°C/W

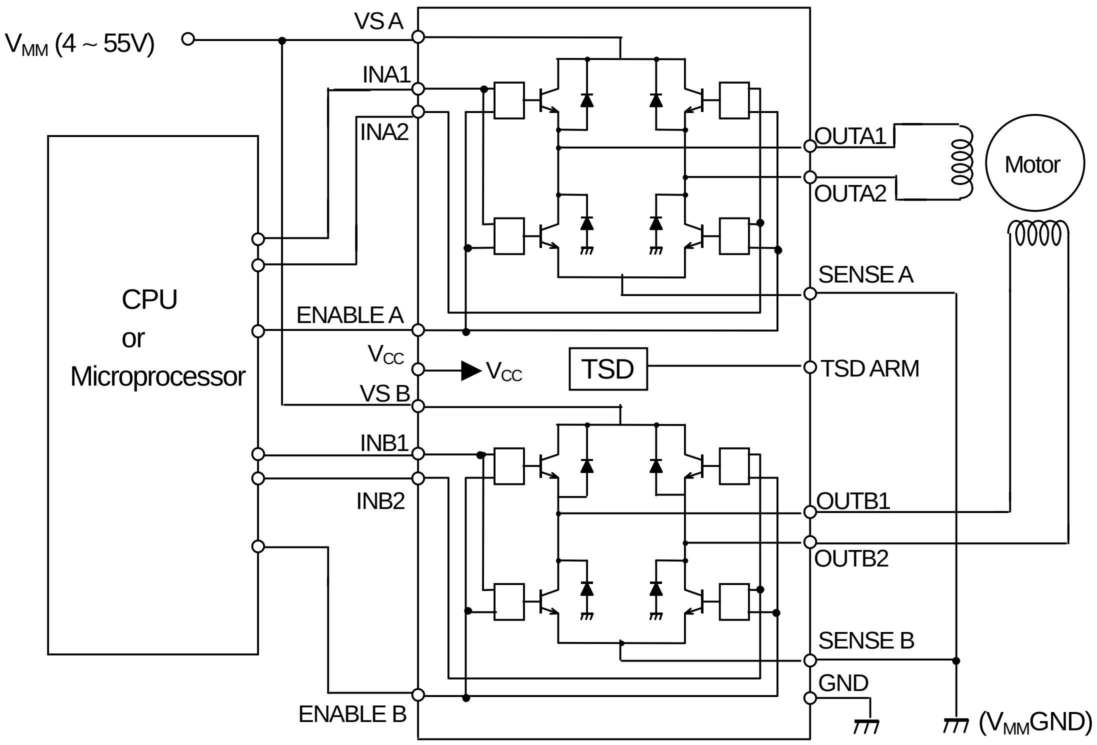
Note : All ground pins soldered onto a 20 cm^2 PCB copper area with free air convection, T_A=+25°C

■ELECTRICAL CHARACTERISTICS

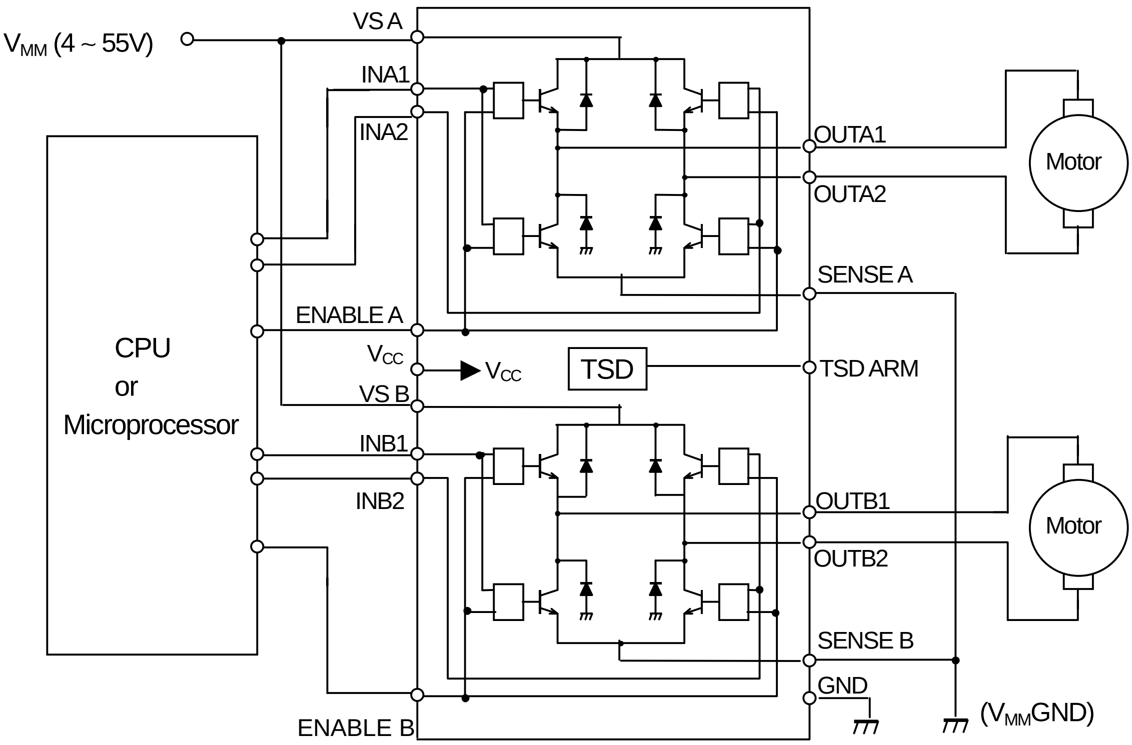
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
GENERAL						
Quiescent current	Icc	Enable=H,IN1=IN3=L,IN2=IN4=H	-	40	-	mA
Thermal shutdown	Ttsd		-	170	-	°C
Off-State leak current	$Itsd_{-LEAK}$	TSD ARM=5V	-	-	50	µA
Thermal alarm output saturation	Vtsd	Io=5mA	-	0.5	0.7	V
Dead time protection	Td		-	1	-	µs
LOGIC						
Input LOW voltage	Vi_L		-	-	0.6	V
Input HIGH voltage	Vi_H		2	-	-	V
Input HIGH current	Ii_H	Vi=2.4V	-	-	20	µA
Input LOW current	Ii_L	Vi=0.4V	-0.4	-	-	mA
OUTPUT						
Upper transistor saturation	V_{OU1}	Io=1000mA	-	1.3	1.5	V
	V_{OU2}	Io=1300mA	-	1.5	1.8	V
Lower transistor saturation	V_{OL1}	Io=1000mA	-	0.5	0.8	V
	V_{OL2}	Io=1300mA	-	0.8	1.3	V
Upper diode forward	V_{fU1}	Io=1000mA	-	1.3	1.6	V
	V_{fU2}	Io=1300mA	-	1.6	1.9	V
Lower diode forward	V_{fL1}	Io=1000mA	-	1.3	1.6	V
	V_{fL2}	Io=1300mA	-	1.6	1.9	V
Output leakage current	Lo_{-LEAK}	V_{MM}=50V	-	-	1	mA
Upper diode recoverly time	Trr_U		-	250	-	ns
Lower diode recoverly time	Trr_L		-	250	-	ns

■TYPICAL APPLICATION

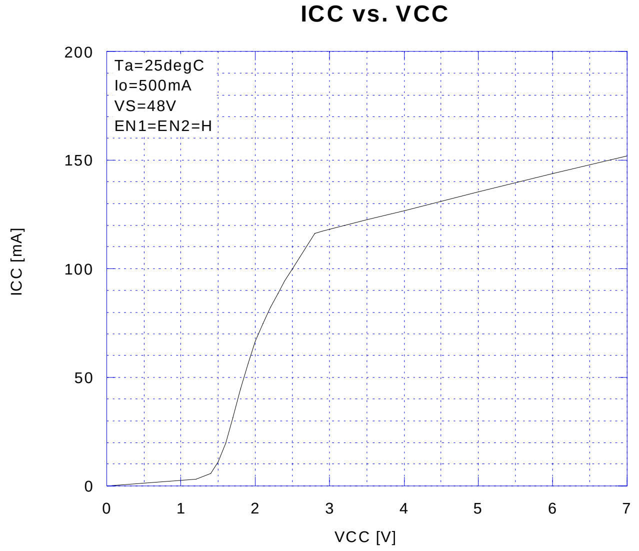
1). Bipolar Stepping Motor

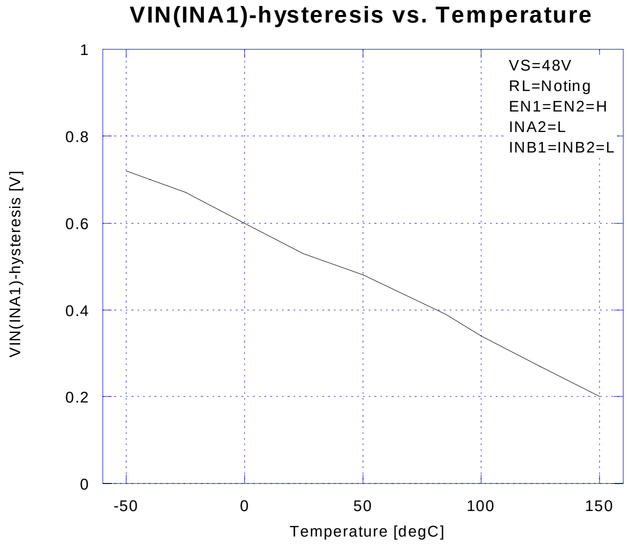


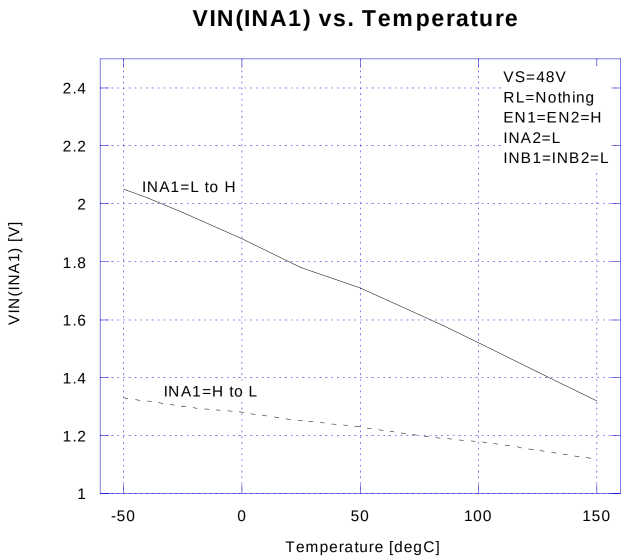
2). Single Phase DC Motor

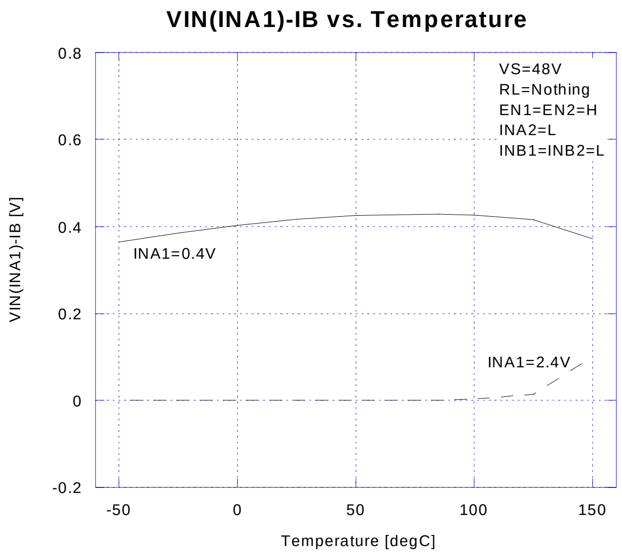


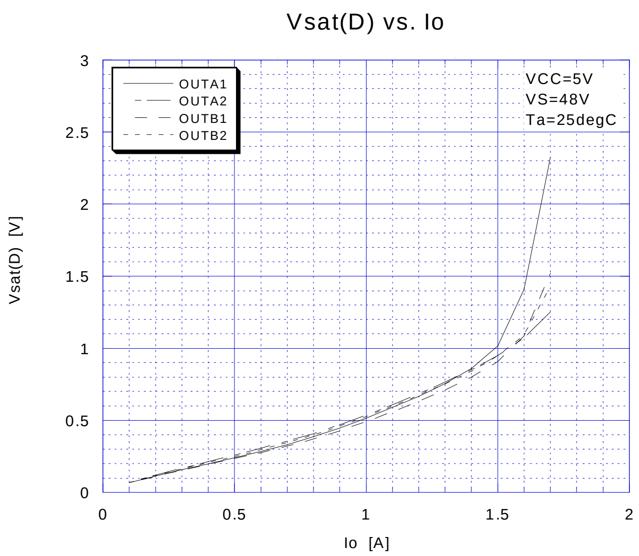
■TYPICAL APPLICATION 1

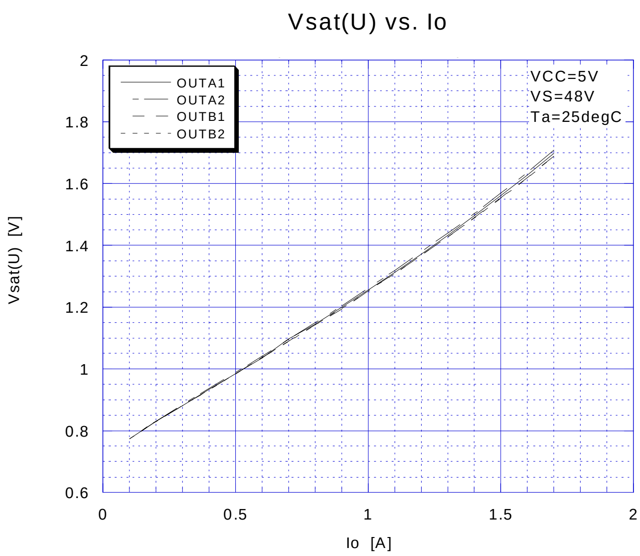




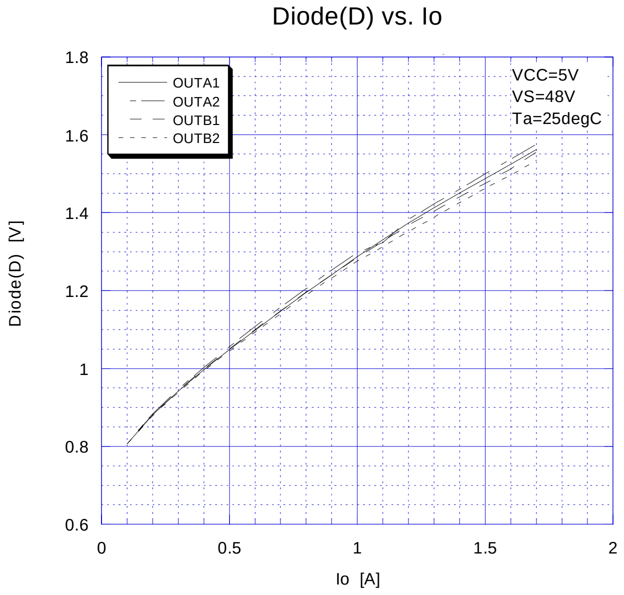


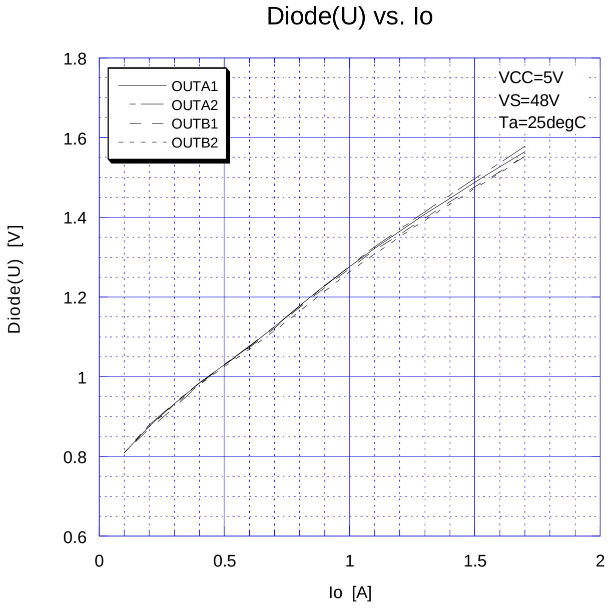


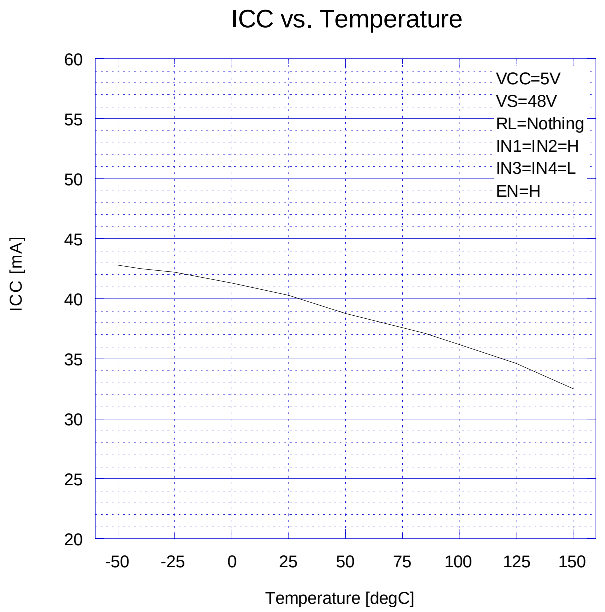


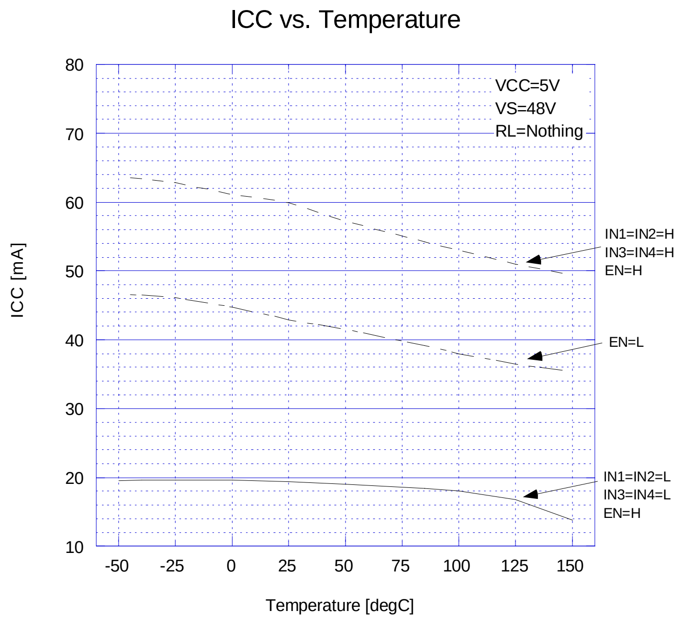


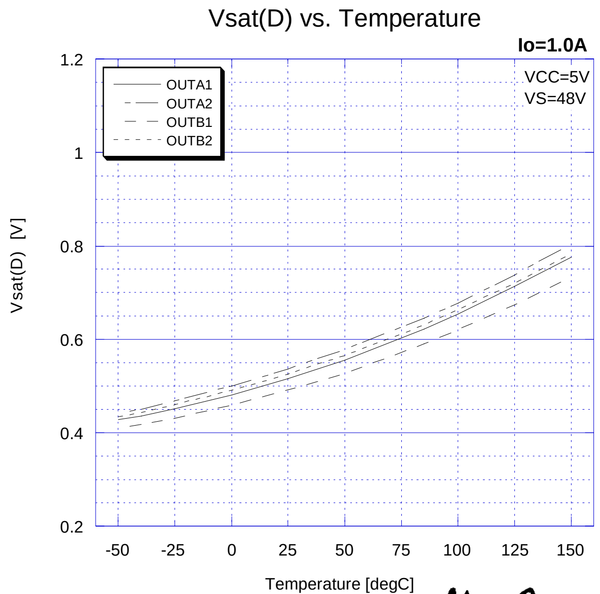
■TYPICAL APPLICATION 2

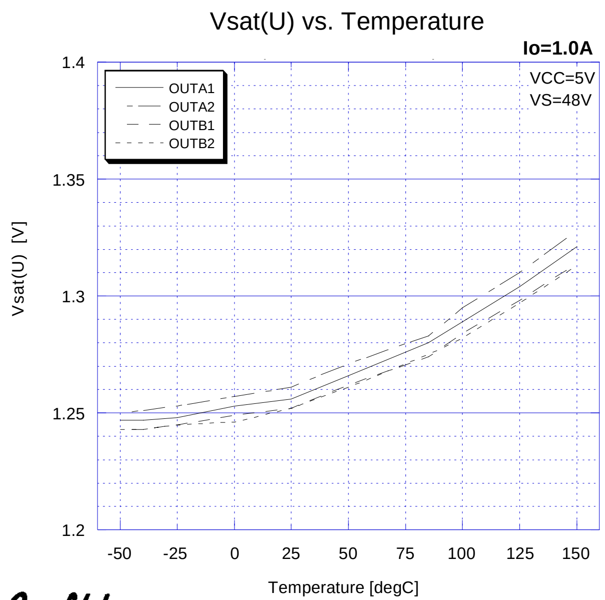












■TYPICAL APPLICATION 3