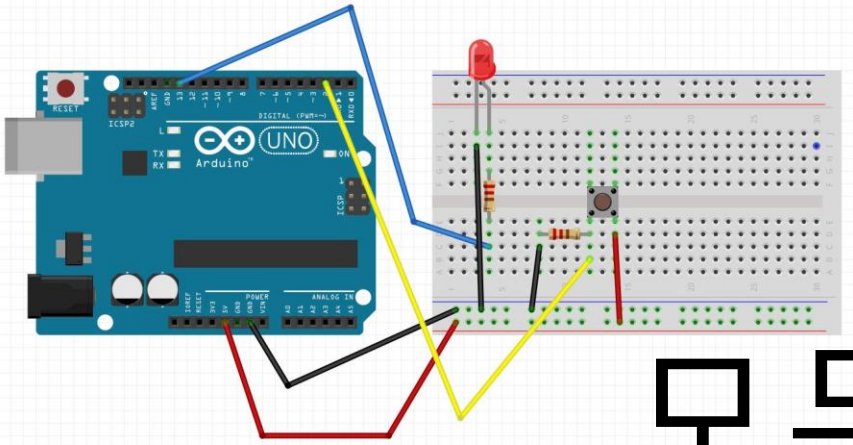


모두의 아두이노
트랜지스터 기초(1)

#나혼자난다 #아두이노 #트랜지스터

대상 : 모두의 연구소 연구원

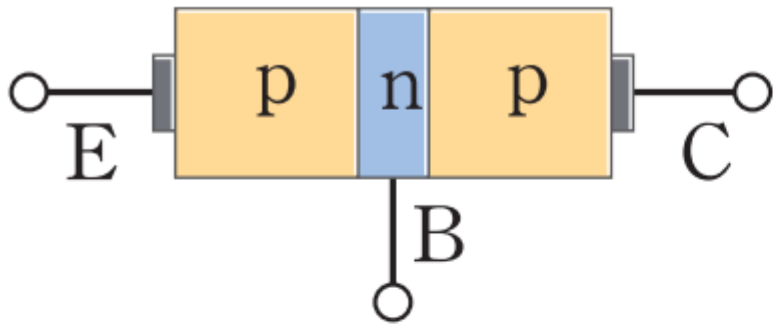
작성자 : 서종원 연구원 (3DKIDS)

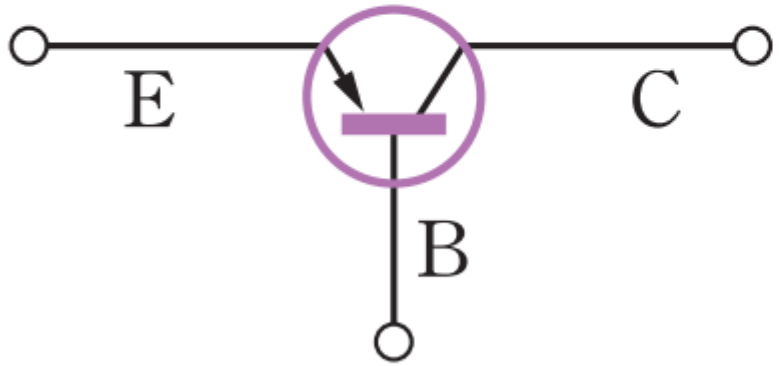
트랜지스터 역할

- p형 반도체와 n형 반도체를 교대로 접합하여 만든 것으로, 전류의 흐름을 조절하여 증폭 작용과 스위칭 작용을 함

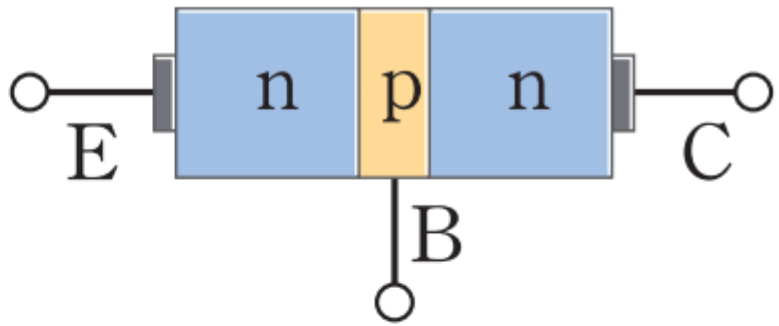
- 가볍고, 소비 전력이 적으며, 가격도 저렴하여 대부분의 전자 회로에 사용되고 있음

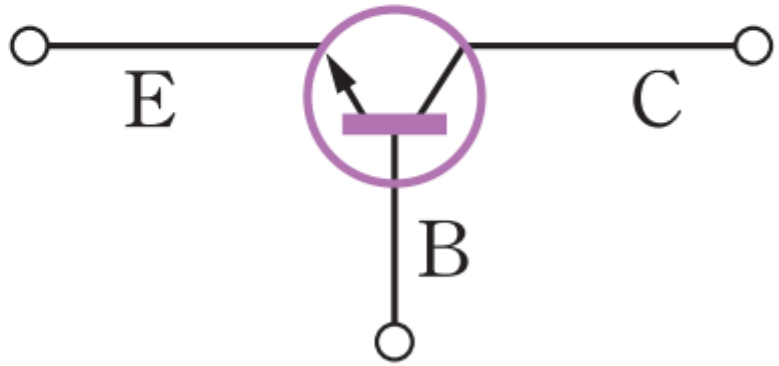
트랜지스터 종류





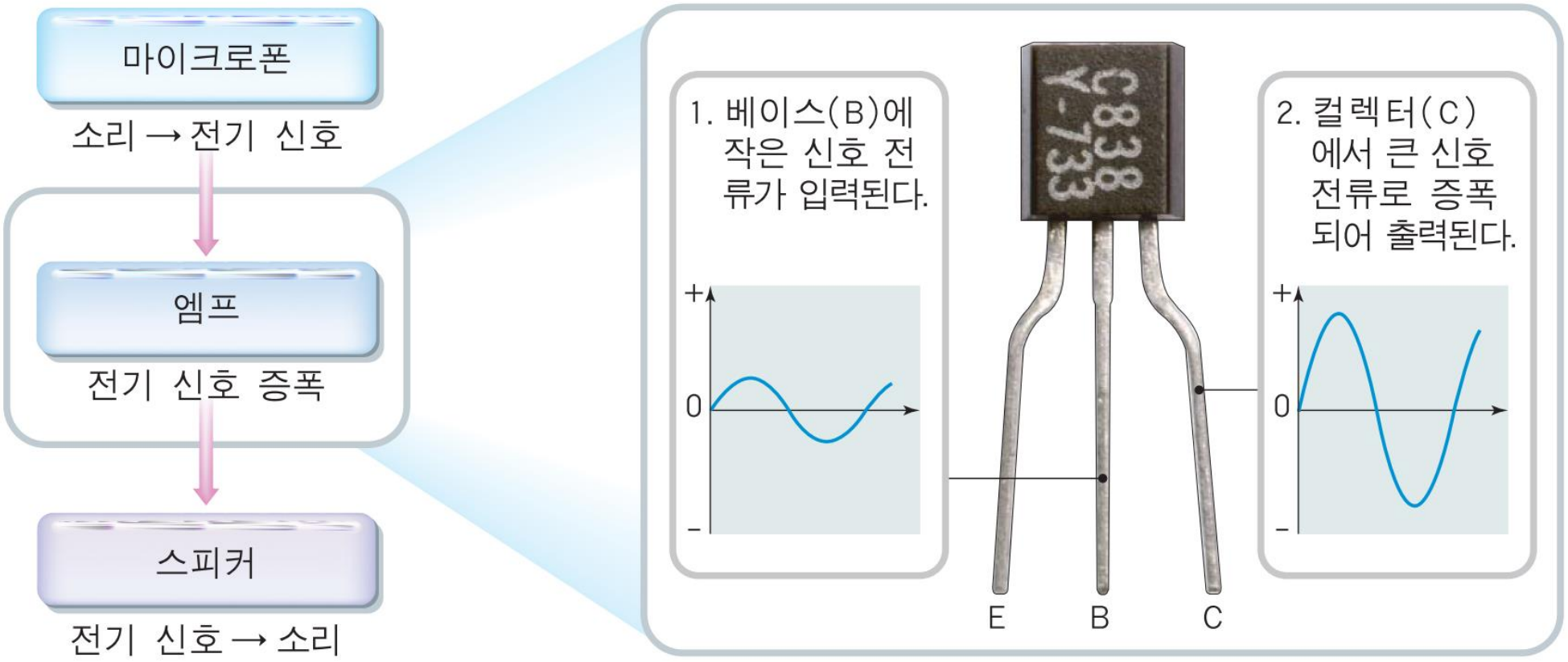
p−n−p형 트랜지스터





n−p−n형 트랜지스터

증폭작용


마이크로폰
소리 → 전기 신호
엠프
전기 신호 증폭
스피커
전기 신호 → 소리
1. 베이스(B)에 작은 신호 전류가 입력된다.
2. 컬렉터(C)에서 큰 신호 전류로 증폭되어 출력된다.
C838
A-733
E
B
C
+
0
-

데이타시트
간단히 보기

TIP32G, TIP32AG, TIP32BG, TIP32CG (PNP)

Complementary Silicon Plastic Power Transistors

Designed for use in general purpose amplifier and switching applications.

Features

- High Current Gain − Bandwidth Product
- Compact TO−220 Package
- These Devices are Pb−Free and are RoHS Compliant*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector − Emitter Voltage TIP31G, TIP32G TIP31AG, TIP32AG TIP31BG, TIP32BG TIP31CG, TIP32CG	V_{CEO}	 40 60 80 100	Vdc
Collector−Base Voltage TIP31G, TIP32G TIP31AG, TIP32AG TIP31BG, TIP32BG TIP31CG, TIP32CG	V_{CB}	 40 60 80 100	Vdc
Emitter−Base Voltage	V_{EB}	5.0	Vdc
Collector Current − Continuous	I_C	3.0	Adc
Collector Current − Peak	I_{CM}	5.0	Adc
Base Current	I_B	1.0	Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	 40 0.32	 W W/°C
Total Power Dissipation @ T_A = 25°C Derate above 25°C	P_D	 2.0 0.016	 W W/°C
Unclamped Inductive Load Energy (Note 1)	E	32	mJ
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be

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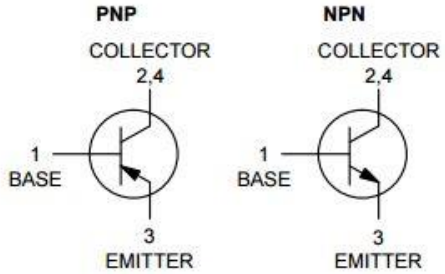
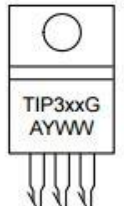
3 AMPERE POWER TRANSISTORS COMPLEMENTARY SILICON 40−60−80−100 VOLTS, 40 WATTS



TO−220
CASE 221A
STYLE 1

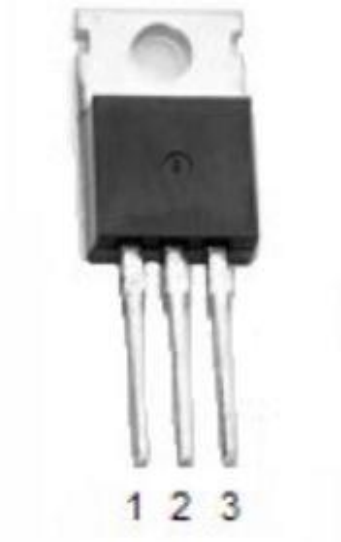
MARKING DIAGRAM

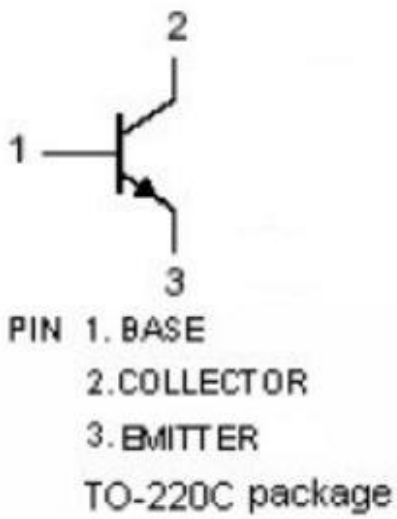


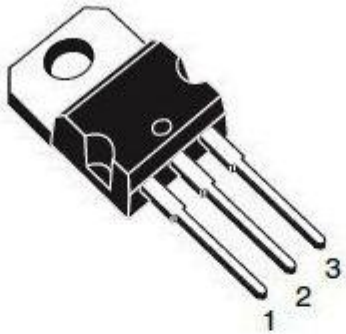
TIP31C High power NPN transistors

Case Style	TO220
V_{CB}	100V
V_{CE}	100V
V_{EB}	5V
I_C	3A
P_{TOT}	40W
H_{FE} min @ I_C 1mA	25

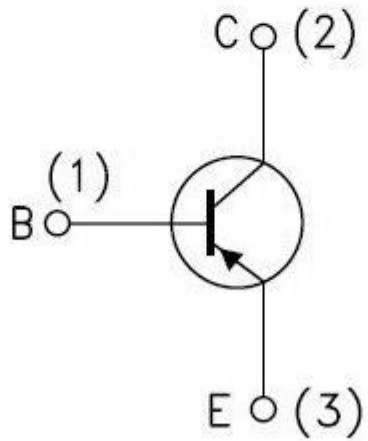
Pinout

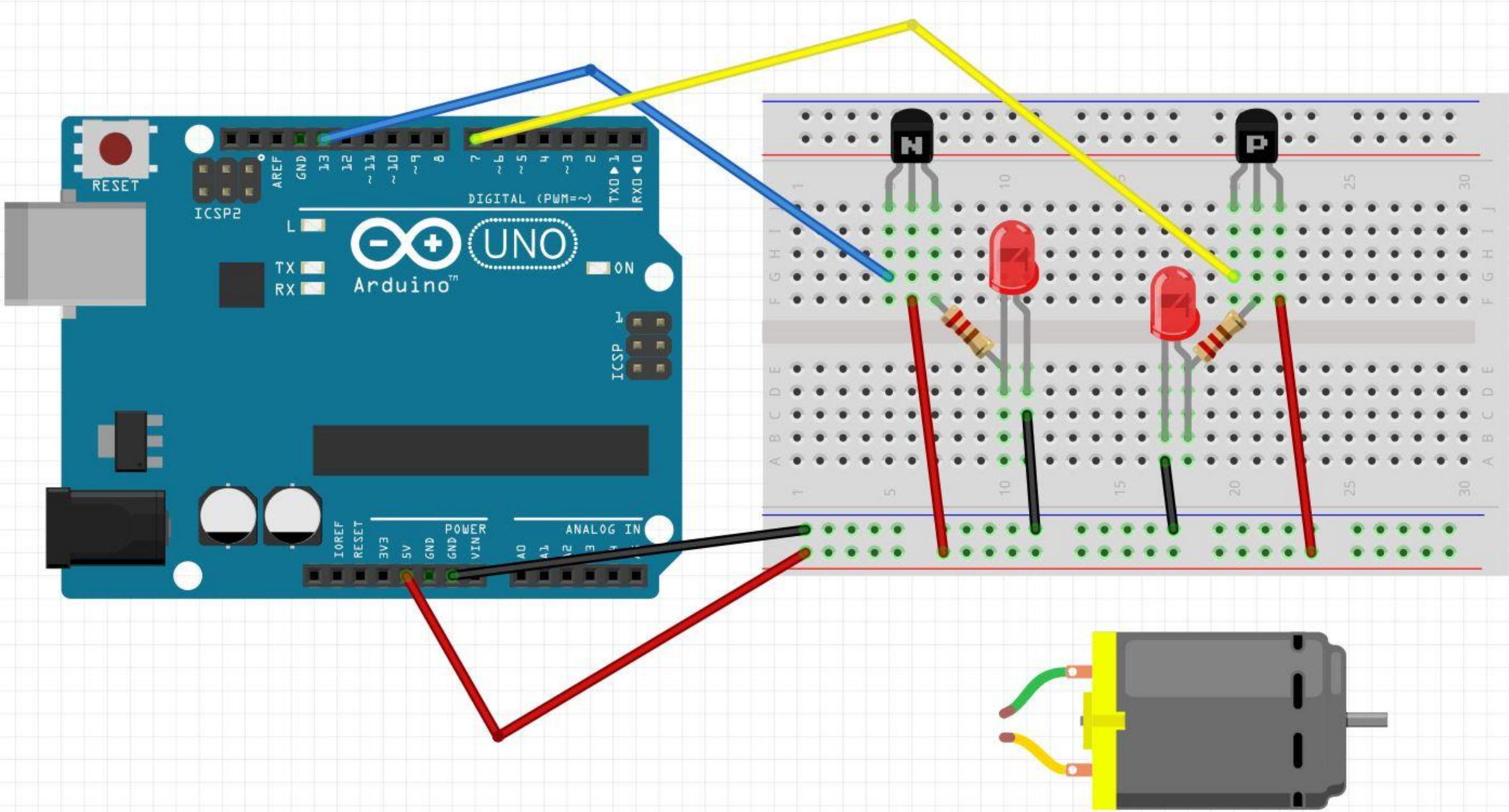






TIP32C




RESET
ICSP2
AREF
GND
13
12
~11
~10
~9
8
7
~6
~5
4
~3
2
TX→1
RX←0
DIGITAL (PWM=~)
L
TX
RX
UNO
Arduino™
ON
ICSP
POWER
ANALOG IN
IOREF
RESET
3V3
5V
GND
GND
VIN
A0
A1
N
P

참고 자료 링크

- http://www.rohm.co.kr/web/korea/tr_what1