

## Power management (dual transistors)

### DESCRIPTION

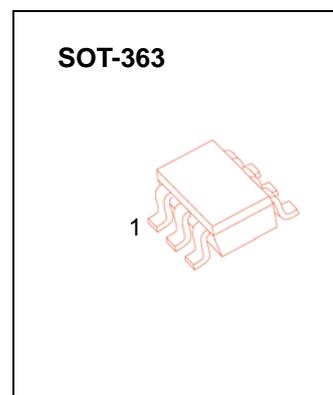
Silicon epitaxial planar transistor

### FEATURES

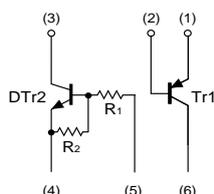
- 2SA2018 and DTC114E are housed independently in a package.
- Power switching circuit in a single package.
- Mounting cost and area can be cut in half.

### APPLICATION

Power management circuit, mobile telephone quiver circuit  
For portable equipment:(i.e. Mobile phone,MP3, MD,CD-ROM, DVD-ROM, Note book PC, etc.)



### Equivalent Circuit



### MARKING:F21



TR1 MAXIMUM RATINGS  $T_a=25^{\circ}\text{C}$  unless otherwise noted

Symbol	Parameter	Value	Units
$V_{CBO}$	Collector- Base Voltage	-15	V
$V_{CEO}$	Collector-Emitter Voltage	-12	V
$V_{EBO}$	Emitter-Base Voltage	-6	V
$I_C$	Collector Current -Continuous	-0.5	A
$P_C$	Collector Dissipation	0.15	W
$T_J$	Junction Temperature	150	$^{\circ}\text{C}$
$T_{stg}$	Storage Temperature	-55-150	$^{\circ}\text{C}$

DTR2 Absolute maximum ratings( $T_a=25^{\circ}\text{C}$ )

Parameter	Symbol	Limits	Unit
Supply voltage	$V_{CC}$	50	V
Input voltage	$V_{IN}$	-10~40	V
Output current	$I_O$	50	mA
	$I_{C(MAX)}$	100	
Power dissipation	$P_d$	150	mW
Junction temperature	$T_j$	150	$^{\circ}\text{C}$
Storage temperature	$T_{stg}$	-55~150	$^{\circ}\text{C}$

**TR1 ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=-10\mu A, I_E=0$	-15			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=-1mA, I_B=0$	-12			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=-10\mu A, I_C=0$	-6			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=-15V, I_E=0$			-0.1	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=-6V, I_C=0$			-0.1	$\mu A$
DC current gain	$h_{FE}$	$V_{CE}=-2V, I_C=-10mA$	270		680	
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C=-200mA, I_B=-10mA$			-0.25	V
Transition frequency	$f_T$	$V_{CE}=-2V, I_C=-10mA, f=100MHz$		260		MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=-10V, I_E=0, f=1MHz$		6.5		pF

**DTR2 Electrical characteristics (Ta=25°C)**

Parameter	Symbol	Min.	Typ	Max.	Unit	Conditions
Input voltage	$V_{I(off)}$			0.5	V	$V_{CC}=5V, I_O=100\mu A$
	$V_{I(on)}$	3				$V_O=0.3V, I_O=10mA$
Output voltage	$V_{O(on)}$			0.3	V	$I_O/I_I=10mA/0.5mA$
Input current	$I_I$			0.88	mA	$V_I=5V$
Output current	$I_{O(off)}$			0.5	$\mu A$	$V_{CC}=50V, V_I=0$
DC current gain	$G_I$	30				$V_O=5V, I_O=5mA$
Input resistance	$R_I$	7	10	13	K $\Omega$	
Resistance ratio	$R_2/R_1$	0.8	1	1.2		
Transition frequency	$f_T$		250		MHz	$V_{CE}=10V, I_E=-5mA, f=100MHz$