XP8081

Silicon N-channel junction FET (Tr1)
Silicon NPN epitaxial planer transistor (Tr2)

For analog switching (Tr1)/switching (Tr2)

Features

- Two elements incorporated into one package.
- Reduction of the mounting area and assembly cost by one half.

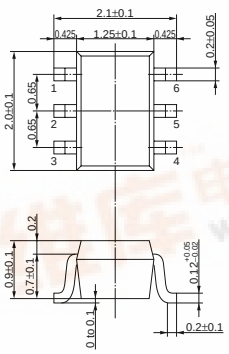
Basic Part Number of Element

- 2SK1103+UN1213 (transistors with built-in resistor)

Absolute Maximum Ratings (Ta=25˚C)

Parameter		Symbol	Ratings	Unit
Tr1	Gate to drain voltage	V_{GDS}	–50	V
	Drain current	I_D	20	mA
	Gate current	I_G	10	mA
Tr2	Collector to base voltage	V_{CBO}	50	V
	Collector to emitter voltage	V_{CEO}	50	V
	Collector current	I_C	100	mA
Overall	Total power dissipation	P_T	150	mW
	Junction temperature	T_j	150	˚C
	Storage temperature	T_{stg}	–55 to +150	˚C

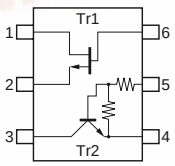
Unit: mm



1 : Drain (Tr1)
2 : Source (Tr1)
3 : Collector (Tr2)
4 : Emitter (Tr2)
5 : Base (Tr2)
6 : Gate (Tr1)
EIAJ : SC–88
S–Mini Type Package (6–pin)

Marking Symbol: 9Z

Internal Connection



Electrical Characteristics (Ta=25˚C)

- Tr1

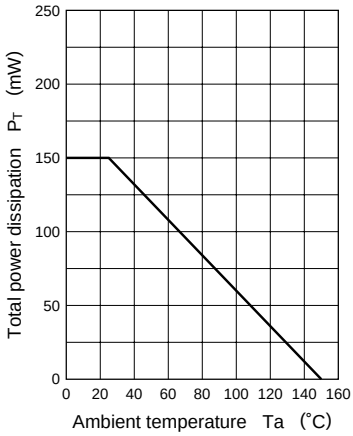
Parameter	Symbol	Conditions	min	typ	max	Unit
Gate to drain voltage	V_{GDS}	I_G = –10μA, V_{DS} = 0	–50			V
Drain current	I_{DSS}	V_{DS} = 10V, V_{GS} = 0	0.2		2.2	mA
Gate cutoff current	I_{GSS}	V_{GS} = –30V, V_{DS} = 0			–10	nA
Gate to source cutoff voltage	V_{GSC}	V_{DS} = 10V, I_D = 10μA			–1.0	V
Mutual conductance	gm	V_{DS} = 10V, I_D = 1mA, f = 1kHz	1.8	2.5		mS
Drain resistance	$R_{DS(on)}$	V_{DS} = 10mV, V_{GS} = 0		400		Ω
Common source short-circuit input capacitance	C_{iss}	V_{DS} = 10V, V_{GS} = 0, f = 1MHz		7		pF
Common source reverse transfer capacitance	C_{rss}	V_{DS} = 10V, V_{GS} = 0, f = 1MHz		1.5		pF
Common source short-circuit output capacitance	C_{oss}	V_{DS} = 10V, V_{GS} = 0, f = 1MHz		1.5		pF

- Tr2

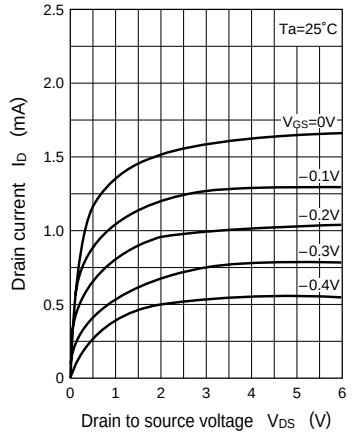
Parameter	Symbol	Conditions	min	typ	max	Unit
Collector to base voltage	V_{CBO}	I_C = 10μA, I_E = 0	50			V
Collector to emitter voltage	V_{CEO}	I_C = 2mA, I_B = 0	50			V
Collector cutoff current	I_{CBO}	V_{CB} = 50V, I_E = 0			0.1	μA
	I_{CEO}	V_{CE} = 50V, I_B = 0			0.5	μA
Emitter cutoff current	I_{EBO}	V_{EB} = 6V, I_C = 0			0.1	mA
Forward current transfer ratio	h_{FE}	V_{CE} = 10V, I_C = 5mA	80			
Collector to emitter saturation voltage	$V_{CE(sat)}$	I_C = 10mA, I_B = 0.3mA			0.25	V
Output voltage high level	V_{OH}	V_{CC} = 5V, V_B = 0.5V, R_L = 1kΩ	4.9			V
Output voltage low level	V_{OL}	V_{CC} = 5V, V_B = 3.5V, R_L = 1kΩ			0.2	V
Transition frequency	f_T	V_{CB} = 10V, I_E = –1mA, f = 200MHz		150		MHz
Input resistance	R_1		–30%	47	+30%	kΩ
Resistance ratio	R_1/R_2		0.8	1.0	1.2	

Common characteristics chart

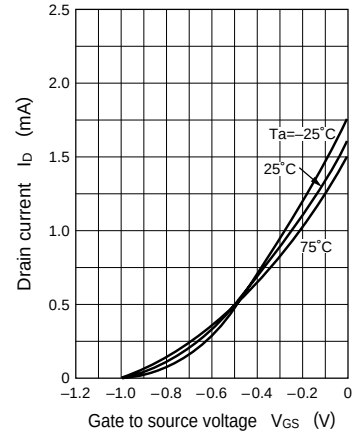
P_T — Ta



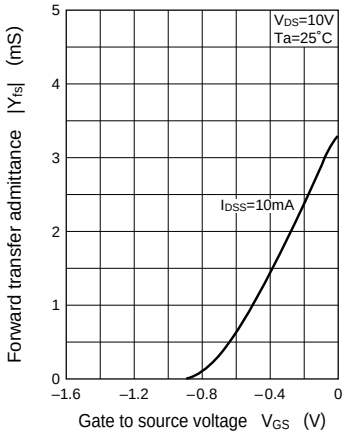
I_D — V_{DS}



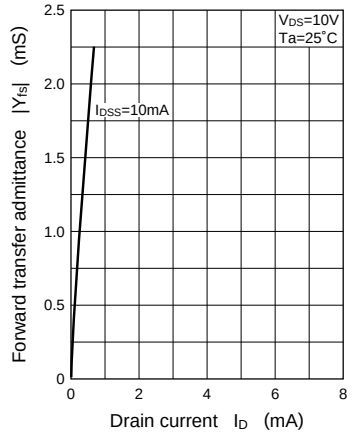
I_D — V_{GS}



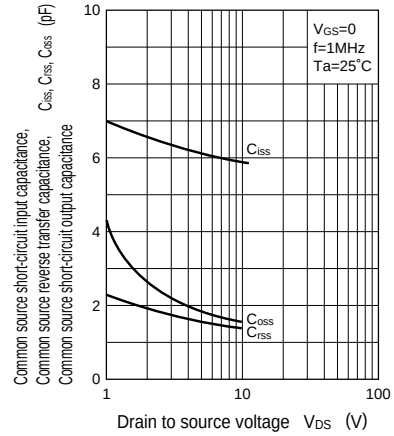
$|Y_{fs}|$ — V_{GS}



$|Y_{fs}|$ — I_D

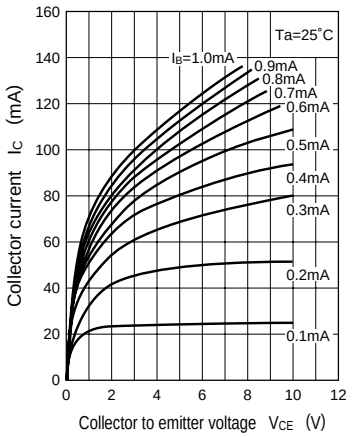


C_{iss}, C_{rss}, C_{oss} — V_{DS}

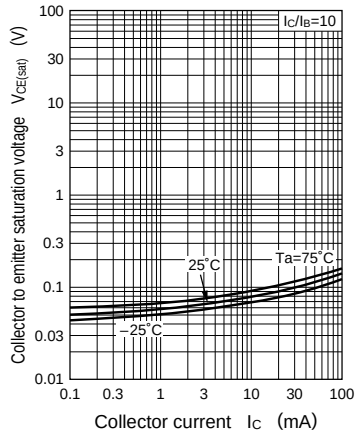


Characteristics charts of Tr2

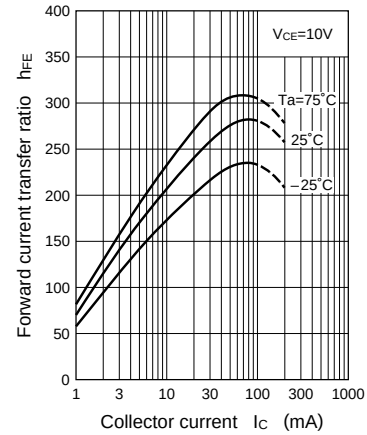
I_C — V_{CE}



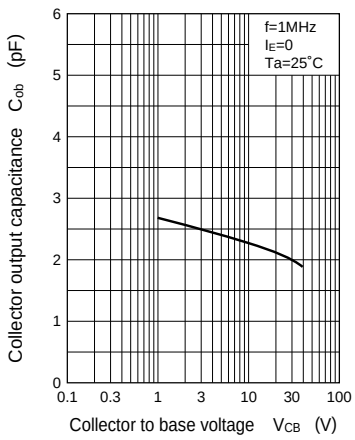
$V_{CE(sat)}$ — I_C



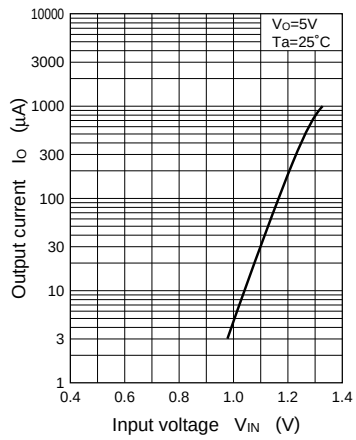
h_{FE} — I_C



$C_{ob} — V_{CB}$



$I_O — V_{IN}$



$V_{IN} — I_O$