FAIRCHILD SEMICONDUCTOR™

SLOTTED OPTICAL SWITCH

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Specified)

Storage Temperature .... −55°C to +100°C
Operating Temperature .... −55°C to +100°C
Soldering:
 Lead Temperature (Iron) .... 240°C for 5 sec.(3,4,5)
 Lead Temperature (Flow) .... 260°C for 10 sec.(3,4)

INPUT DIODE
Continuous Forward Current .... 60 mA
Reverse Voltage .... 6.0 Volts
Power Dissipation .... 100 mW(1)

OUTPUT TRANSISTOR
Collector-Emitter Voltage .... 30 Volts
Emitter-Collector Voltage .... 6 Volts
Power Dissipation .... 150 mW(2)

ELECTRICAL CHARACTERISTICS (T_A = 25°C Unless Otherwise Specified)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
INPUT DIODE						
Forward Voltage	V_F	—		1.7	V	I_F = 60 mA
Reverse Breakdown Voltage	V_R	6.0		—	V	I_R = 10μA
Reverse Leakage Current	I_R	—		1.0	μA	V_R = 3 V
OUTPUT TRANSISTOR						
Emitter-Collector Breakdown	BV_{ECO}	6.0		—	V	I_E = 100 μA, Ee = 0
Collector-Emitter Breakdown	BV_{CEO}	30		—	V	I_C = 1 mA, Ee = 0
Collector-Emitter Leakage	I_{CEO}	—		100	nA	V_{CE} = 25 V, Ee = 0
COUPLED						
On-State Collector Current	$I_{C(ON)}$		See page 3.		mA	
Saturation Voltage	$V_{CE(SAT)}$		See page 3.		V	
Turn-On Time	t_{on}		See page 3.		μS	
Turn-Off Time	t_{off}		See page 3.		μS	

NOTES

1. *Derate power dissipation linearly 1.33 mW/°C above 25°C.*
2. *Derate power dissipation linearly 2.00 mW/°C above 25°C.*
3. *RMA flux is recommended.*
4. *Methanol or Isopropyl alcohols are recommended as cleaning agents.*
5. *Soldering iron tip 1/16″ (1.6 mm) from housing.*

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$I_{C(ON)}$, $V_{CE(SAT)}$, t_{on}, AND t_{off}

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	TEST CONDITIONS
ON-STATE COLLECTOR CURRENT						
H22A1	$I_{C(ON)}$	0.15	—	—	mA	I_F = 5mA, V_{CE} = 5V
H22A2	$I_{C(ON)}$	0.30	—	—	mA	I_F = 5mA, V_{CE} = 5V
H22A3	$I_{C(ON)}$	0.60	—	—	mA	I_F = 5mA, V_{CE} = 5V
H22A1	$I_{C(ON)}$	1.0	—	—	mA	I_F = 20mA, V_{CE} = 5V
H22A2	$I_{C(ON)}$	2.0	—	—	mA	I_F = 20mA, V_{CE} = 5V
H22A3	$I_{C(ON)}$	4.0	—	—	mA	I_F = 20mA, V_{CE} = 5V
H22A1	$I_{C(ON)}$	1.9	—	—	mA	I_F = 30mA, V_{CE} = 5V
H22A2	$I_{C(ON)}$	3.0	—	—	mA	I_F = 30mA, V_{CE} = 5V
H22A3	$I_{C(ON)}$	5.5	—	—	mA	I_F = 30mA, V_{CE} = 5V
SATURATION VOLTAGE						
H22A2	$V_{CE(SAT)}$	—	—	0.40	V	I_F = 20mA, I_C = 1.8mA
H22A3	$V_{CE(SAT)}$	—	—	0.40	V	I_F = 20mA, I_C = 1.8mA
H22A1	$V_{CE(SAT)}$	—	—	0.40	V	I_F = 30mA, I_C = 1.8mA
Turn-On Time	t_{on}	—	8	—	μS	V_{CC} = 5V, I_F = 30 mA, R_L = 2.5KΩ
Turn-Off Time	t_{off}	—	50	—	μS	V_{CC} = 5V, I_F = 30 mA, R_L = 2.5KΩ

TYPICAL CHARACTERISTICS

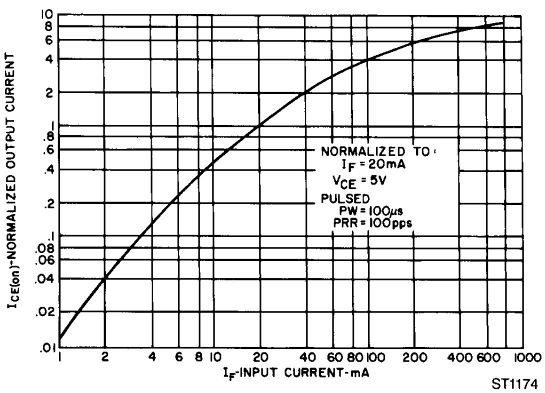

Fig. 1. Output Current vs. Input Current

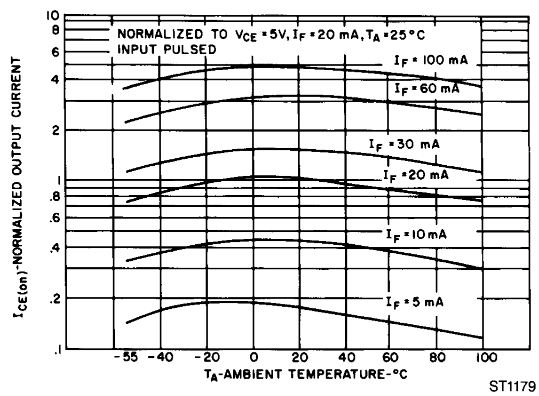

Fig. 2. Output Current vs. Temperature

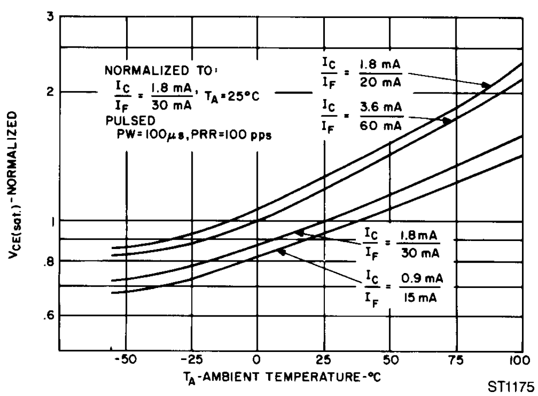

Fig. 3. $V_{CE(SAT)}$ vs. Temperature

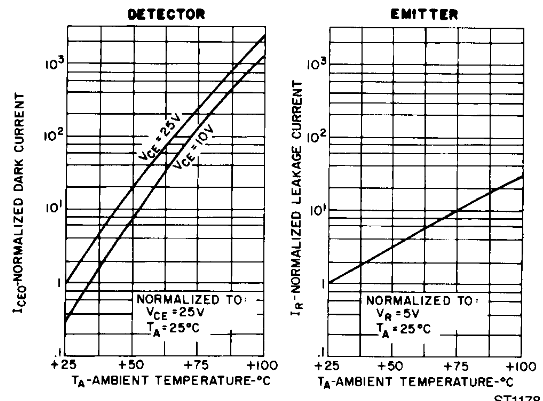

Fig. 4. Leakage Currents vs. Temperature

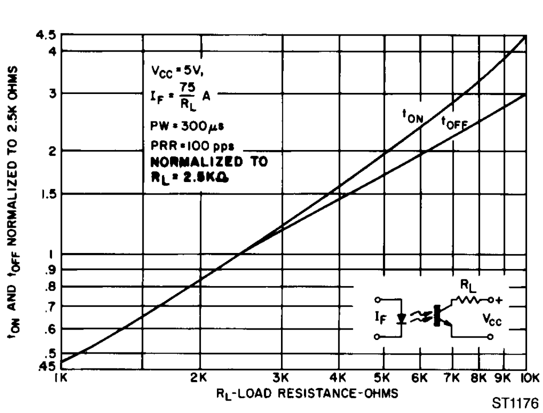

Fig. 5. Switching Speed vs. R_L

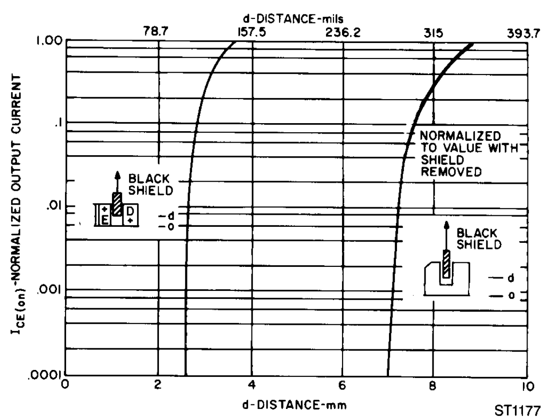

Fig. 6. Output Current vs. Shield Distance

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