

## 600V, 25A STANDARD TRIAC

This device is suitable for low power AC switching application, phase control application such as fan speed and temperature modulation control, lighting control and static switching relay.

### • Features

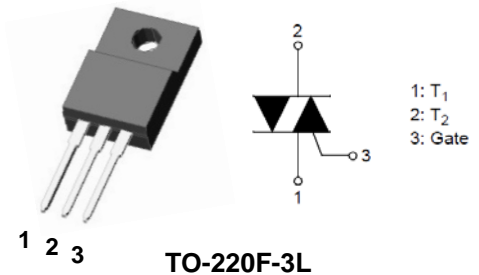
- Repetitive Peak Off-State Voltage :  $V_{DRM}=600V$
- R.M.S On-State Current :  $I_{T(RMS)}=25A$
- Gate trigger current :  $I_{GT}=35mA$  max (Mode I - II - III)
- High Commutation:  $(di/dt)_C = 13.0A/ms$  (Min)

### Applications

- Switching mode power supply, light dimmer
- TV sets, stereo, refrigerator, washing machine
- Electric blanket, solenoid driver, small motor control
- Photo copier, electric tool

### Ordering Information

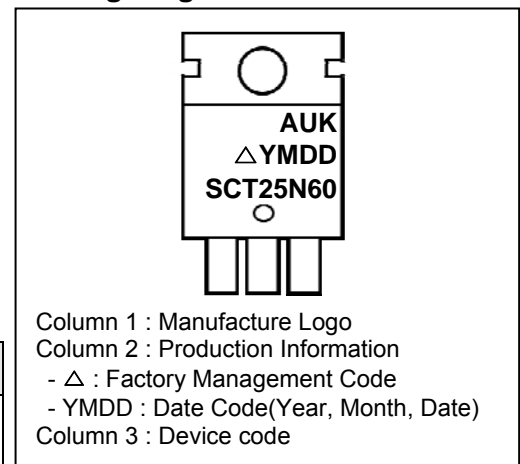
Device	Marking Code	Package	Packaging
SCT25N60FD	SCT25N60	TO-220F-3L	50 Units / Tube



### Product Characteristics

Symbol	Rating
$I_{T(RMS)}$	25A
$V_{DRM}$	600V

### Marking Diagram



### Absolute Maximum Ratings (Limiting Values)

Characteristic	Symbol	Value	Unit
Repetitive Peak Off-state Voltage	$V_{DRM}$	600	V
RMS on-state current (full sine wave)	$I_{T(RMS)}$	25	A
Non-repetitive surge peak on-state current (full cycle, $T_j$ initial = 25°C)	$I_{TSM}$	260	A
$I^2t$ Value for fusing	$I^2t$	340	A <sup>2</sup> s
Peak gate current	$I_{GM}$	4	A
Average gate peak dissipation	$P_{G(AV)}$	1	W
Storage temperature range	$T_{stg}$	-40 to +150	°C
Operating junction temperature range	$T_j$	-40 to +125	°C

## Thermal Characteristics

Characteristic	Symbol	Value	Unit
Maximum thermal resistance junction to case (AC)	$R_{th(j-c)}$	2.8	$^{\circ}C/W$
Maximum thermal resistance junction to ambient (AC)	$R_{th(j-a)}$	60	$^{\circ}C/W$

## Electrical Characteristics ( $T_J=25^{\circ}C$ , unless otherwise specified)

### Off Characteristics

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Repetitive peak Off-state current	$I_{DRM}$	$V_D = V_{DRM}$	-	-	5	$\mu A$
Repetitive peak reverse current	$I_{RRM}$	$V_R = V_{RRM}$	-	-	5	$\mu A$

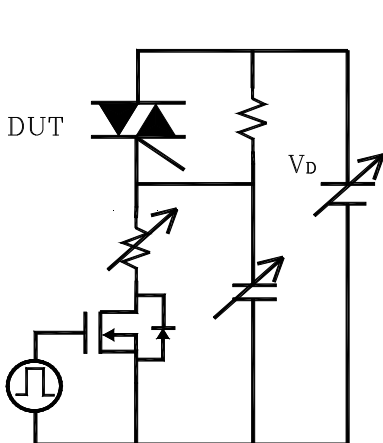
### On Characteristics

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Peak On-state voltage	$V_{TM}$	$I_T = 17A$	-	-	1.55	V
Holding current	$I_H$	$V_D = 12V, I_T = 0.2A$	-	-	50	mA
Gate trigger current	$I_{GT} (I - II - III)$	$V_D = 12V, R_L = 30\Omega$	-	-	35	mA
	$I_{GT} (IV)$	-	-	-	-	mA
Gate trigger voltage	$V_{GT} (I - II - III)$	$V_D = 12V, R_L = 30\Omega$	-	-	1.3	V
Gate Non-trigger voltage	$V_{GD}$	$V_D = V_{DRM}, T_J=125^{\circ}C$	0.2	-	-	V

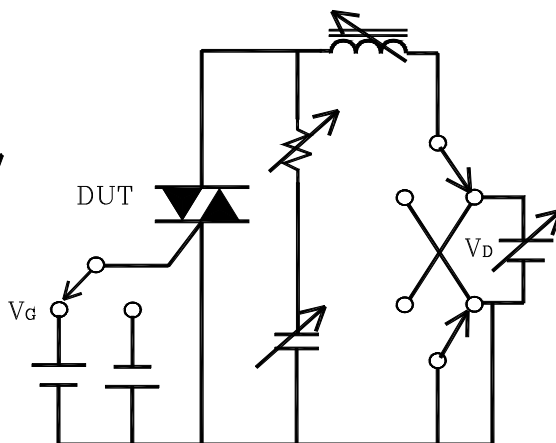
### Dynamic Characteristics

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Critical rate of rise of Off-state Voltage	$(dV/dt)_s$	$V_D = 2/3 V_{DRM}, T_J=125^{\circ}C$	2500	-	-	$V/\mu S$
Rate of Change of Commutation Current	$(dI/dt)_c$	$(dV/dt)_c=10V/\mu s \downarrow, T_J=125^{\circ}C$	13.0	-	-	A/ms
Critical rate of rise of on-state current	$dI/dt$	$f=120Hz, I_G = 2 \times I_{GT}, t_r \leq 100 ns, T_J=125^{\circ}C$	-	-	50	$A/\mu S$

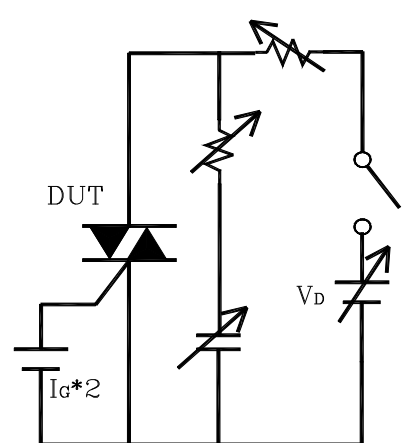
Simple circuit for  $(dV/dt)_s$



Simple circuit for  $(dI/dt)_c$  vs  $(dV/dt)_c$

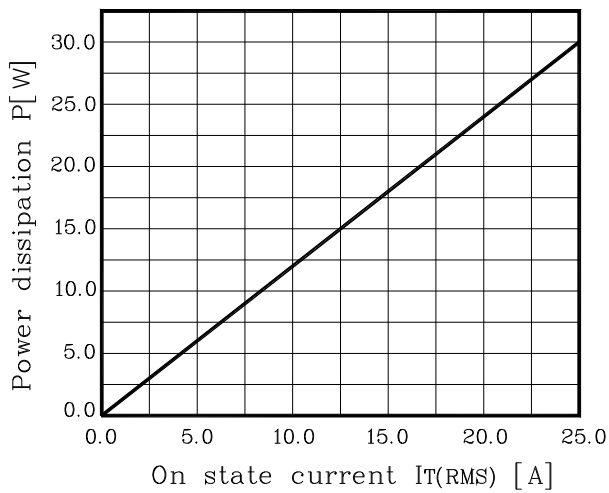


Simple circuit for  $dI/dt$

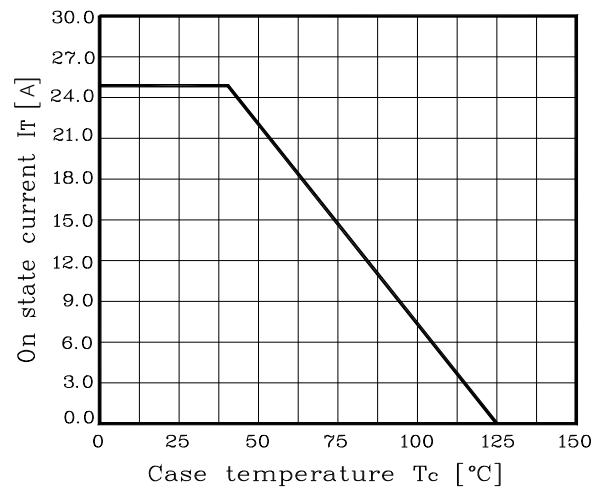


## Electrical Characteristic Curves

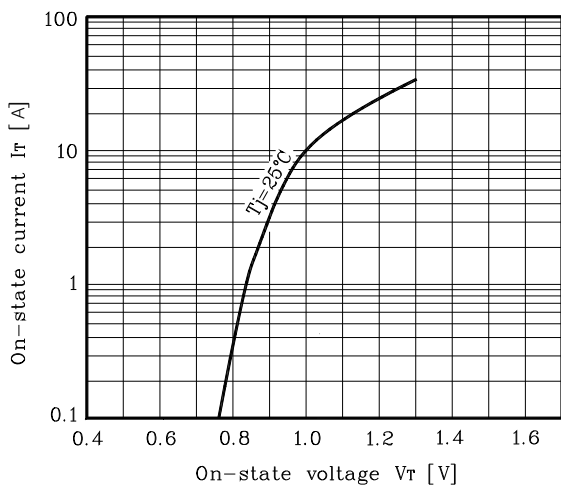
**Fig. 1**  $P - I_{T(RMS)}$



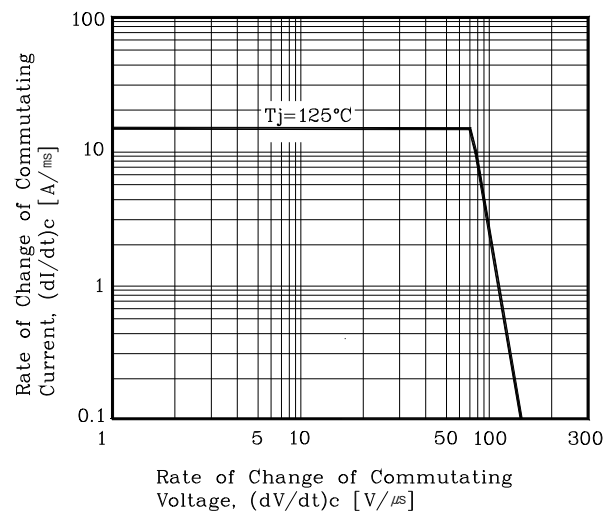
**Fig. 2**  $I_{T(RMS)} - T_C$



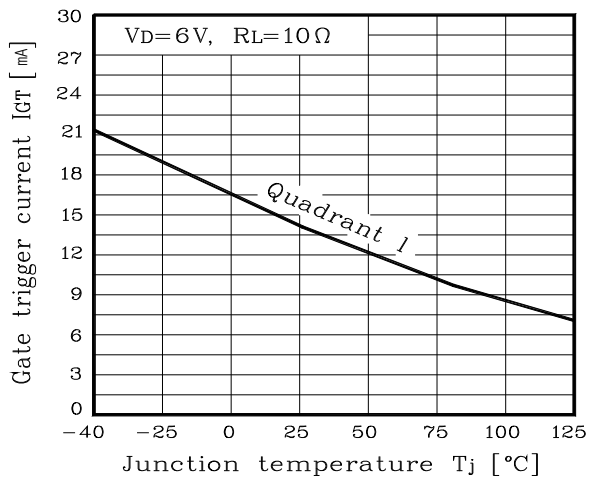
**Fig. 3**  $I_T - V_T$



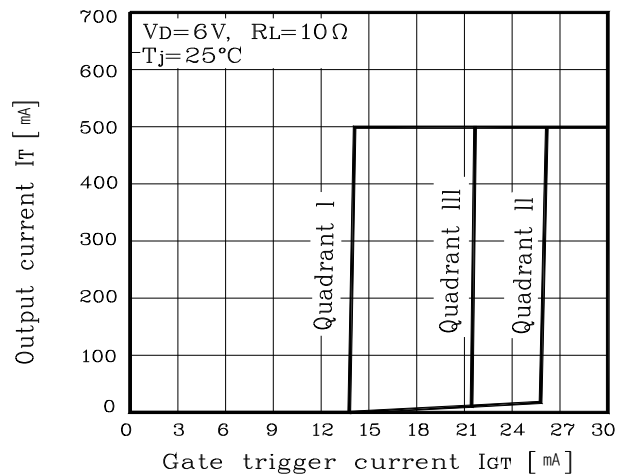
**Fig. 4**  $(dI/dt)_C - (dV/dt)_C$



**Fig. 5**  $I_{GT} - T_j$

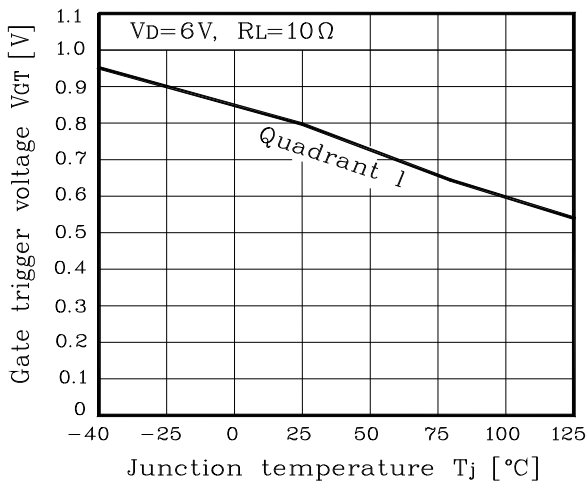


**Fig. 6**  $I_T - I_{GT}$

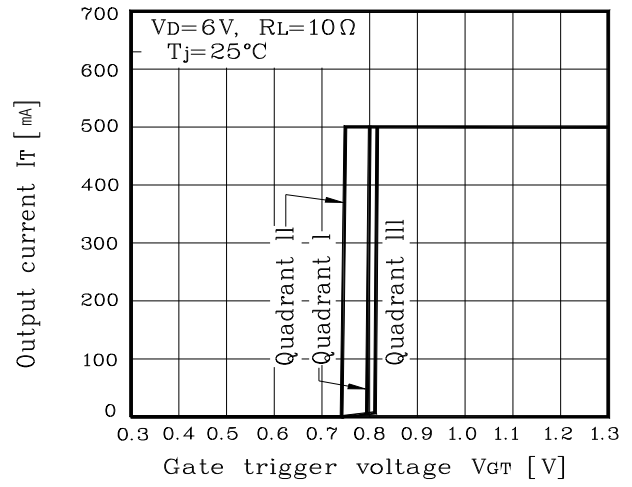


## Electrical Characteristic Curves

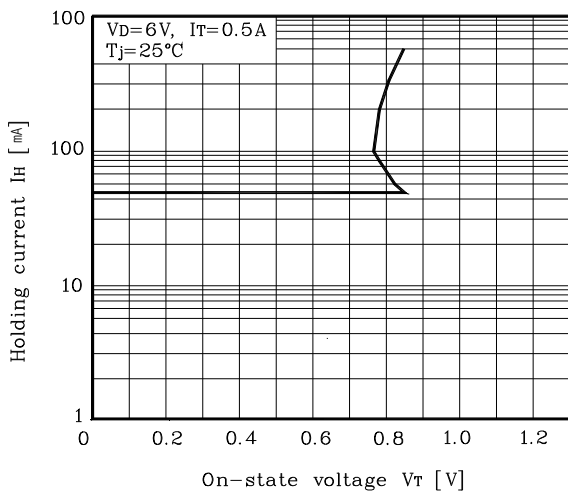
**Fig. 7  $V_{GT} - T_j$**



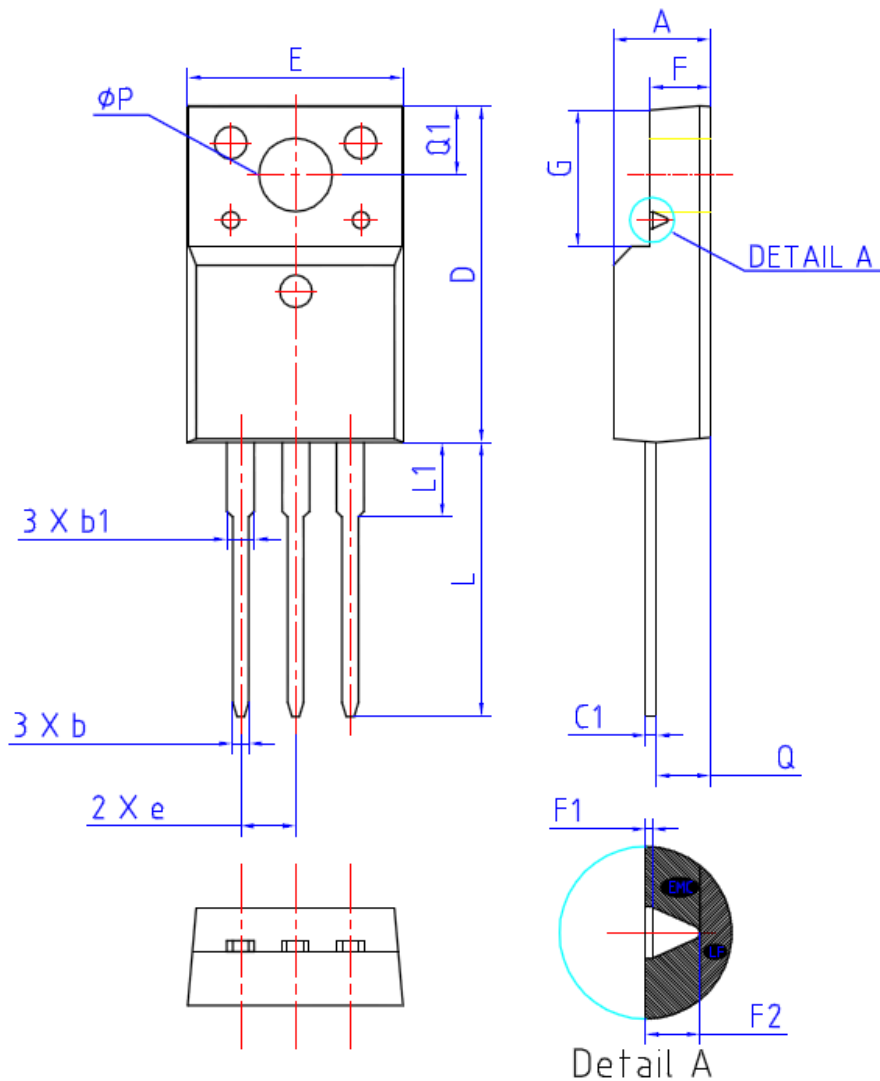
**Fig. 8  $I_T - V_{GT}$**



**Fig. 9  $I_H - V_T$**



## Package Outline Dimensions



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	4.50	4.70	4.90	
b	0.70	0.80	0.90	
b1	1.33	1.40	1.47	
C1	0.45	0.50	0.60	
D	15.67	15.87	16.07	
E	9.96	10.16	10.36	
e	2.54BSC			
F	2.34	2.54	2.74	
F1	(0.10 REF)			
F2	(0.84 REF)			
G	6.48	6.68	6.88	
L	12.78	12.98	13.18	
L1	3.03	3.23	3.43	
Q	2.56	2.76	2.96	
Q1	3.10	3.30	3.50	
$\phi P$	3.08	3.18	3.28	

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