



CS060160ET2

主要参数 MAIN CHARACTERISTICS

$I_T(AV)$	60A
V_{DRM}/V_{RRM}	1600V
I_{GT}	150mA

用途

- 直流电机控制
- 软启动交流电机控制
- 光、热温度控制

产品特性

- 台面终端芯片, 高可靠性和一致性
- 环保 RoHS 产品

APPLICATIONS

- DC motor control
- Softstart AC motor controller
- Light, heat and temperature control

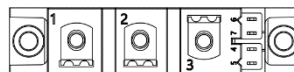
FEATURES

- Glass-passivated mesa chip for reliability and uniform
- RoHS products

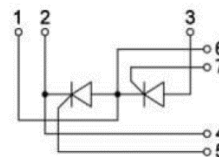
封装 Package



外形示意图



引脚示意图



电路示意图

订货信息 ORDER MESSAGES

订货型号 Order codes	印记 Marking	封装 Package
无卤-散装	CS060160ET2	ET2
Halogen-Free-Bulk		
CS060160ET2-ET2-FR		



电特性 ELECTRICAL CHARACTERISTIC ($T_C=25^{\circ}\text{C}$)

Symbol	Definition	Conditions	min.	typ.	max.	Unit
V_{RSMDSM}	max. non-repetitive reverse/forward blocking voltage	$T_{\text{VJ}} = 25^{\circ}\text{C}$			1700	V
V_{RRMIDRM}	max. repetitive reverse/forward blocking voltage	$T_{\text{VJ}} = 25^{\circ}\text{C}$			1600	V
$I_{\text{R/D}}$	reverse current, drain current	$V_{\text{R/D}} = 1600 \text{ V}$ $T_{\text{VJ}} = 25^{\circ}\text{C}$			200	μA
		$V_{\text{R/D}} = 1600 \text{ V}$ $T_{\text{VJ}} = 125^{\circ}\text{C}$			8	mA
V_{T}	forward voltage drop	$I_{\text{T}} = 100 \text{ A}$ $T_{\text{VJ}} = 25^{\circ}\text{C}$			1.35	V
		$I_{\text{T}} = 200 \text{ A}$			1.70	V
		$I_{\text{T}} = 100 \text{ A}$ $T_{\text{VJ}} = 125^{\circ}\text{C}$			1.35	V
		$I_{\text{T}} = 200 \text{ A}$			1.70	V
I_{TAV}	average forward current	$T_{\text{C}} = 85^{\circ}\text{C}$ $T_{\text{VJ}} = 125^{\circ}\text{C}$			60	A
$I_{\text{T(RMS)}}$	RMS forward current	180° sine			94	A
V_{TO}	threshold voltage	$T_{\text{VJ}} = 125^{\circ}\text{C}$			0.85	V
r_{T}	slope resistance for power loss calculation only				3.7	$\text{m}\Omega$
R_{thJC}	thermal resistance junction to case				0.45	K/W
R_{thCH}	thermal resistance case to heatsink			0.20		K/W
P_{tot}	total power dissipation	$T_{\text{C}} = 25^{\circ}\text{C}$			222	W
I_{TSM}	max. forward surge current	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}$ $T_{\text{VJ}} = 45^{\circ}\text{C}$			1.50	kA
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{ sine}$ $V_{\text{R}} = 0 \text{ V}$			1.62	kA
		$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}$ $T_{\text{VJ}} = 125^{\circ}\text{C}$			1.28	kA
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{ sine}$ $V_{\text{R}} = 0 \text{ V}$			1.38	kA
I^2t	value for fusing	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}$ $T_{\text{VJ}} = 45^{\circ}\text{C}$			11.3	kA^2s
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{ sine}$ $V_{\text{R}} = 0 \text{ V}$			10.9	kA^2s
		$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}$ $T_{\text{VJ}} = 125^{\circ}\text{C}$			8.13	kA^2s
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{ sine}$ $V_{\text{R}} = 0 \text{ V}$			7.87	kA^2s
C_{J}	junction capacitance	$V_{\text{R}} = 400 \text{ V}$ $f = 1 \text{ MHz}$ $T_{\text{VJ}} = 25^{\circ}\text{C}$		74		pF
P_{GM}	max. gate power dissipation	$t_{\text{p}} = 30 \mu\text{s}$ $T_{\text{C}} = 125^{\circ}\text{C}$			10	W
		$t_{\text{p}} = 300 \mu\text{s}$			5	W
P_{GAV}	average gate power dissipation				0.5	W
$(di/dt)_{\text{cr}}$	critical rate of rise of current	$T_{\text{VJ}} = 125^{\circ}\text{C}; f = 50 \text{ Hz}$ repetitive, $I_{\text{T}} = 150 \text{ A}$			150	$\text{A}/\mu\text{s}$
		$t_{\text{p}} = 200 \mu\text{s}; di_{\text{G}}/dt = 0.45 \text{ A}/\mu\text{s};$				
		$I_{\text{G}} = 0.45 \text{ A}; V = \frac{2}{3} V_{\text{DRM}}$ non-repet., $I_{\text{T}} = 60 \text{ A}$			500	$\text{A}/\mu\text{s}$
$(dv/dt)_{\text{cr}}$	critical rate of rise of voltage	$V = \frac{2}{3} V_{\text{DRM}}$ $T_{\text{VJ}} = 125^{\circ}\text{C}$ $R_{\text{GK}} = \infty$; method 1 (linear voltage rise)			1000	$\text{V}/\mu\text{s}$
V_{GT}	gate trigger voltage	$V_{\text{D}} = 6 \text{ V}$ $T_{\text{VJ}} = 25^{\circ}\text{C}$			1.5	V
		$T_{\text{VJ}} = -40^{\circ}\text{C}$			1.6	V





I_{GT}	gate trigger current	$V_D = 6\text{ V}$	$T_{VJ} = 25^\circ\text{C}$			150	mA
			$T_{VJ} = -40^\circ\text{C}$			300	mA
V_{GD}	gate non-trigger voltage	$V_D = \frac{2}{3} V_{DRM}$	$T_{VJ} = 125^\circ\text{C}$			0.2	V
I_{GD}	gate non-trigger current					10	mA
I_L	latching current	$t_p = 10\text{ }\mu\text{s}$ $I_G = 0.45\text{ A}; di_G/dt = 0.45\text{ A}/\mu\text{s}$	$T_{VJ} = 25^\circ\text{C}$			450	mA
I_H	holding current	$V_D = 6\text{ V}$ $R_{GK} = \infty$	$T_{VJ} = 25^\circ\text{C}$			250	mA
t_{gd}	gate controlled delay time	$V_D = \frac{1}{2} V_{DRM}$ $I_G = 0.45\text{ A}; di_G/dt = 0.45\text{ A}/\mu\text{s}$	$T_{VJ} = 25^\circ\text{C}$			2	μs
t_q	turn-off time	$V_R = 100\text{ V}; I_T = 150\text{ A}; V = \frac{2}{3} V_{DRM}$ $di/dt = 10\text{ A}/\mu\text{s}$ $dv/dt = 20\text{ V}/\mu\text{s}$ $t_p = 200\text{ }\mu\text{s}$	$T_{VJ} = 100^\circ\text{C}$		150		μs



电特性 ELECTRICAL CHARACTERISTIC (T_c=25°C)

Symbol	Test Conditions		Maximum Ratings	Unit
I_{TRMS}, I_{FRMS}	$T_{VJ}=T_{VJM}$		94	A
I_{TAVM}, I_{FAVM}	$T_C=85^{\circ}\text{C}; 180^{\circ}$ sine		60	
I_{TSM}, I_{FSM}	$T_{VJ}=45^{\circ}\text{C}$	$t=10\text{ms}$ (50Hz), sine	2250	A
	$V_R=0$	$t=8.3\text{ms}$ (60Hz), sine	2400	
	$T_{VJ}=T_{VJM}$	$t=10\text{ms}$ (50Hz), sine	2000	
	$V_R=0$	$t=8.3\text{ms}$ (60Hz), sine	2150	
i^2dt	$T_{VJ}=45^{\circ}\text{C}$	$t=10\text{ms}$ (50Hz), sine	25300	A^2s
	$V_R=0$	$t=8.3\text{ms}$ (60Hz), sine	23900	
	$T_{VJ}=T_{VJM}$	$t=10\text{ms}$ (50Hz), sine	20000	
	$V_R=0$	$t=8.3\text{ms}$ (60Hz), sine	19100	
$(di/dt)_{cr}$	$T_{VJ}=T_{VJM}$	repetitive, $I_T=250\text{A}$	150	A/us
	$f=50\text{Hz}, t_p=200\text{us}$			
	$V_D=2/3V_{DRM}$			
	$I_G=0.45\text{A}$	non repetitive, $I_T=I_{TAVM}$	500	
	$di_G/dt=0.45\text{A/us}$			
$(dv/dt)_{cr}$	$T_{VJ}=T_{VJM};$	$V_{DR}=2/3V_{DRM}$	1000	V/us
	$R_{GK}= \quad$; method 1 (linear voltage rise)			
P_{GM}	$T_{VJ}=T_{VJM}$	$t_p=30\text{us}$	10	W
	$I_T=I_{TAVM}$	$t_p=300\text{us}$	5	
P_{GAV}			0.5	W
V_{RGM}			10	V
T_{VJ}			-40...+125	$^{\circ}\text{C}$
T_{VJM}			125	
T_{stg}			-40...+125	
V_{ISOL}	50/60Hz, RMS	$t=1\text{min}$	3000	V~
	$I_{ISOL}\leq 1\text{mA}$	$t=1\text{s}$	3600	
M_d	Mounting torque (M5)		2.5-4.0/22-35	Nm/lb.in.
	Terminal connection torque (M5)		2.5-4.0/22-35	
Weight	Typical including screws		82	g





特征曲线 ELECTRICAL CHARACTERISTICS (curves)

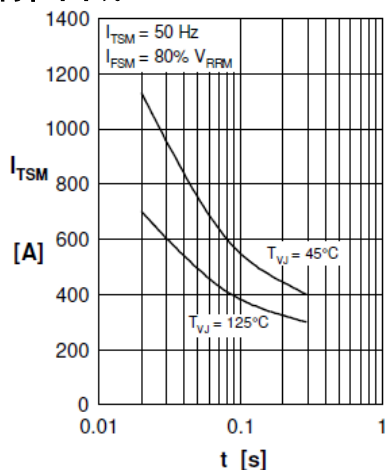


Fig. 1 Surge overload current I_{TSM} ,
 I_{FSM} : Crest value, t : duration

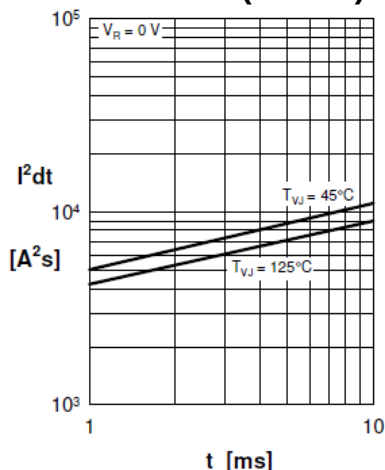


Fig. 2 I^2t versus time (1-10 ms)

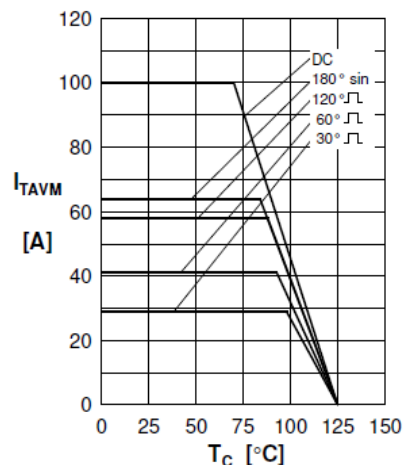


Fig. 3 Max. forward current
at case temperature

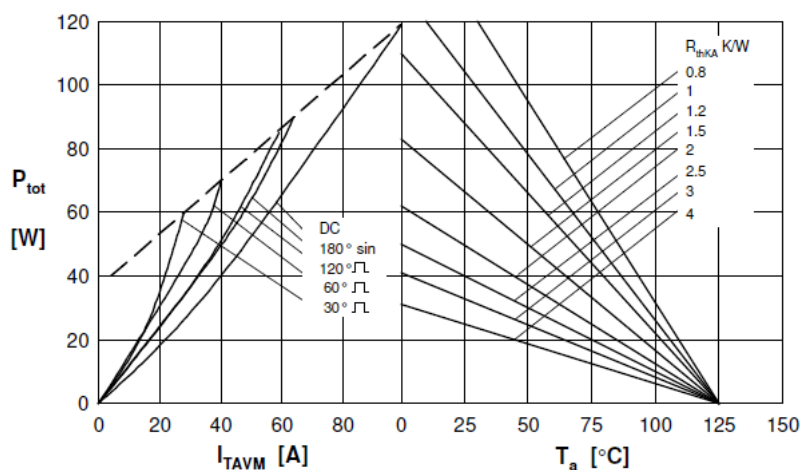


Fig. 4 Power dissipation vs. on-state current & ambient temperature
(per thyristor or diode)

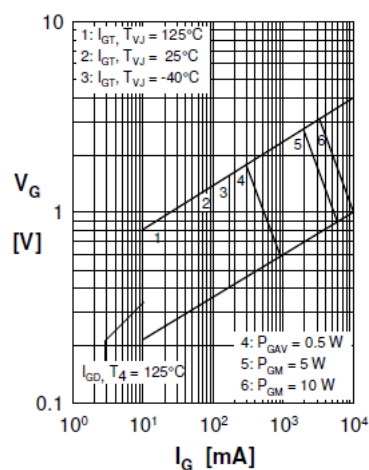


Fig. 5 Gate trigger characteristics

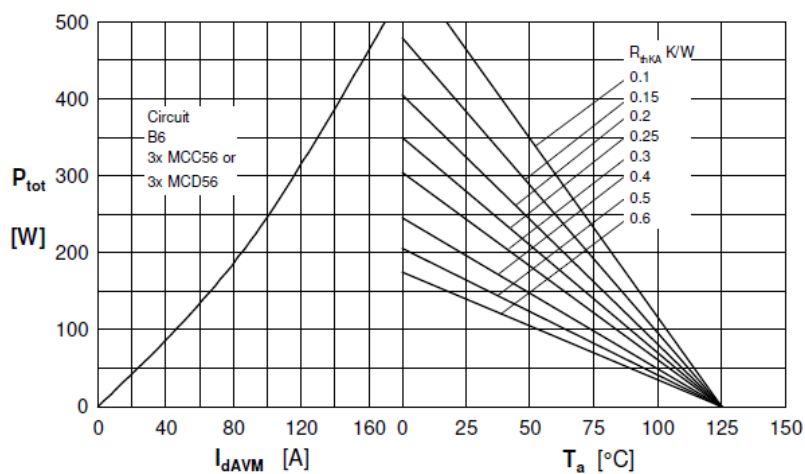


Fig. 6 Three phase rectifier bridge: Power dissipation versus direct
output current and ambient temperature

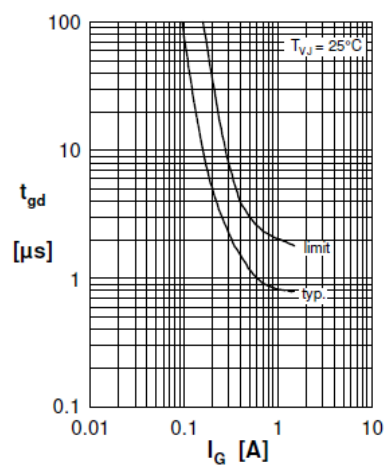


Fig. 7 Gate trigger delay time

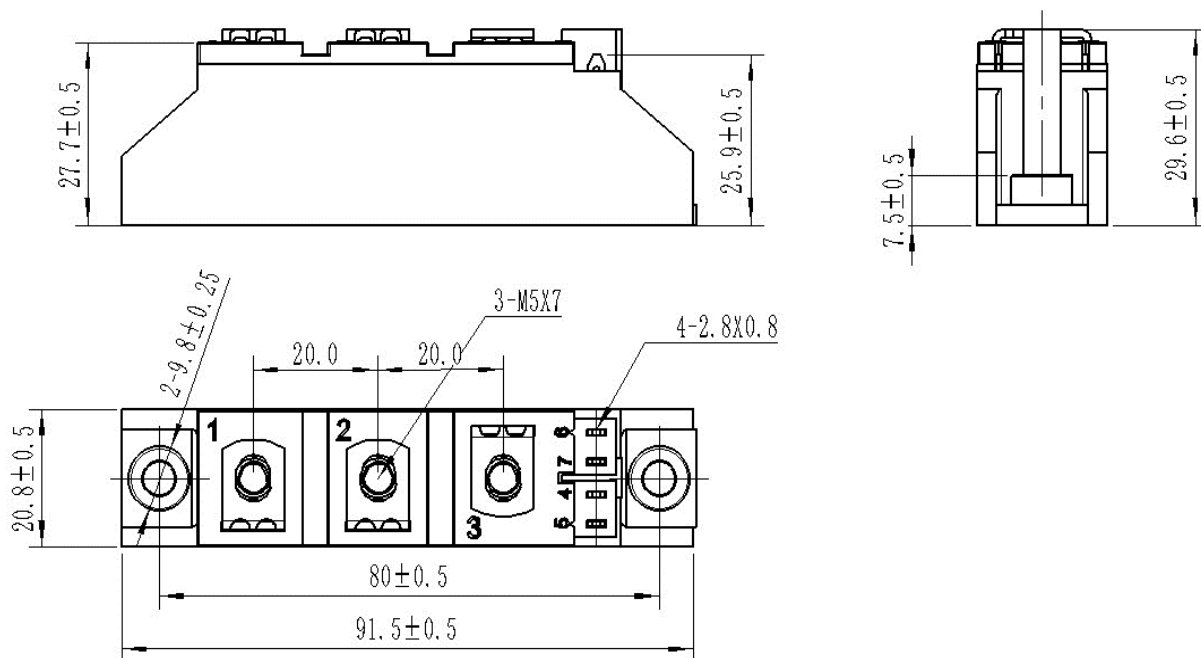




外形尺寸 PACKAGE MECHANICAL DATA

ET2

单位 Unit : mm





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