

20Amp. MOS BARRIER RECTIFIER

SKM2050AJ3

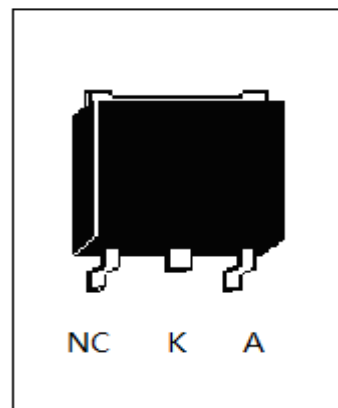
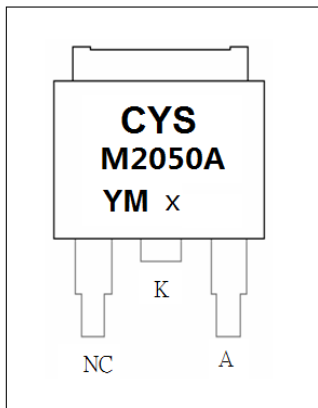
$I_{F(AV)}$	20A
V_{RRM}	50V
V_F at 125°C	0.45V
T_j	150°C

Features

- 150°C operating junction temperature
- Softest, fast switching capability
- Reduced ultra-low forward voltage drop (VF) ; better efficiency and cooler operation.
- Lead-Free Finish; RoHS Compliant
- Halogen and Antimony Free. “Green” Device
- MCD technology provides a superior avalanche capability than schottky diodes

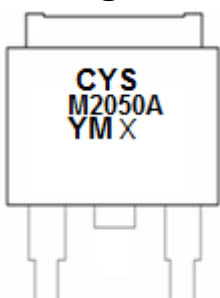
Mechanical Data

- Case: TO-252 molded plastic
- Weight: 0.34 grams approximately
- Terminals: Pure tin plated, lead-free, solderable per MIL-STD-750 method 2026
- Epoxy: UL 94V-0 rate flame retardant
- Polarity : As marked.



TO-252AA

Marking Information



- CYS= Manufacturers' Code Marking
 M2050A = Product Type Marking Code
 Y M = Date Code Marking
 Y = Last Digit of Year (ex: 4 for 2014)
 M = Month code (1 ~ 9、10→A、11→B、12→C)
 X = Assembly site code



Maximum Ratings and Electrical Characteristics

(Rating at 25°C ambient temperature unless otherwise specified. Single phase, half wave, 60Hz, resistive or inductive load. For capacitive load, derate current by 20%.)

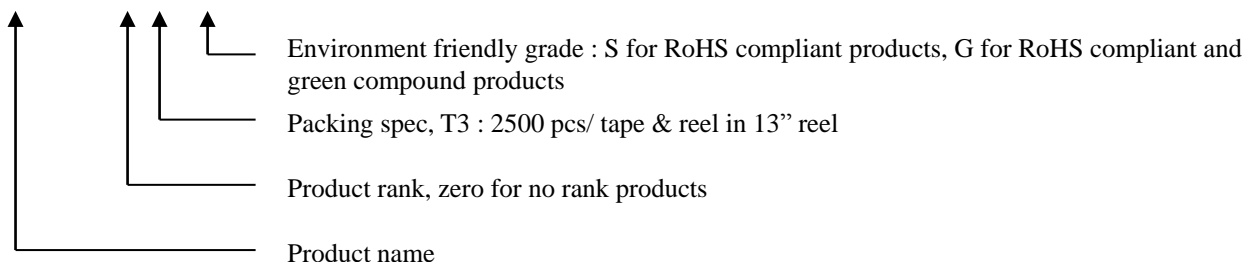
Parameter	Symbol	Min.	Typ.	Max.	Units
Maximum DC blocking voltage	V _{DC}			50	V
Maximum Recurrent peak reverse voltage	V _{R_{RM}}			50	V
Maximum RMS voltage	V _{RMS}			36	V
Maximum instantaneous forward voltage at I _F =20A	V _F	T _C =25°C	0.49	0.55	V
		T _C =125°C	0.45	0.5	
Maximum instantaneous reverse current at	I _R	V _R =50 V, T _C =25°C	130	500	μA
		V _R =50 V, T _C =125°C	45	100	mA
Maximum Average forward rectified current @ T _C =100°C	I _{F(AV)}			20	A
Non-repetitive peak forward surge current @ 8.3ms single half sine wave superimposed on rated load (JEDEC method)	I _{FSM}	300			A
Peak Repetitive Reverse Surge Current (2uS-1Khz)	I _{RRM}			2	A
Maximum Rate of Voltage Change (at Rated VR)	dv/dt			10000	V/μS
Maximum Reverse Recovery Charge	Q _{rr}	I _F =1A, dI _F /dt=100A/μs	27		nC
Maximum Reverse Recovery Time			t _{rr}	27	
Storage temperature range	T _{stg}	-55		150	°C
Operating junction temperature range	T _J	-55		150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Typical Thermal Resistance, Junction-to-case	R _{th,j-c}	3	°C/W
Typical Thermal Resistance, Junction-to-ambient	R _{th,j-a}	125	°C/W

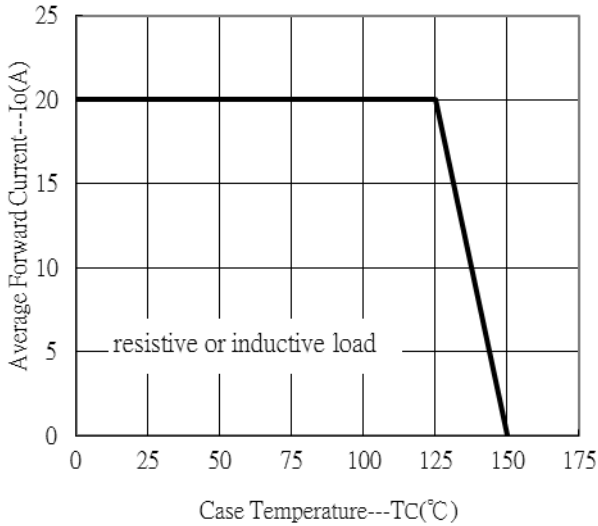
Ordering Information

Device	Package	Shipping
SKM2050AJ3-0-T3-G	TO-252 (Pb-free lead plating and Halogen-free package)	2500/Tape & Reel

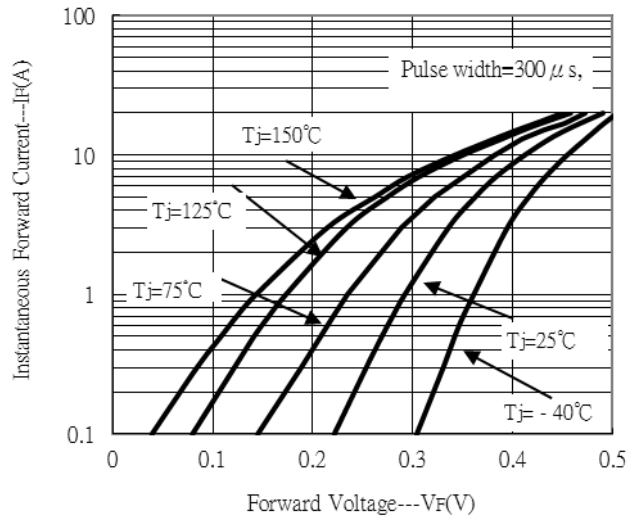


Typical Characteristics

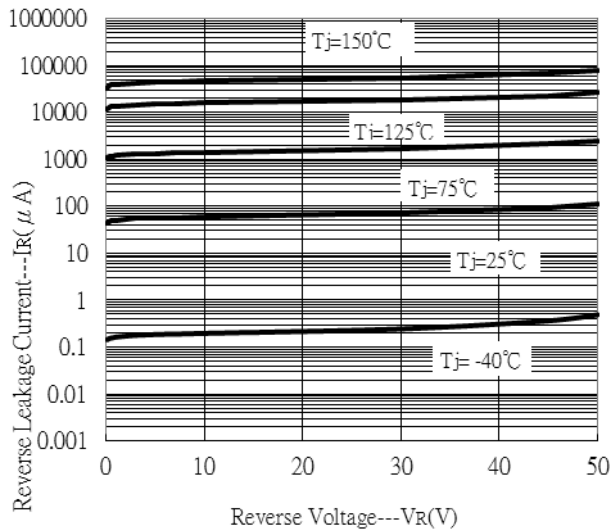
Forward Current Derating Curve



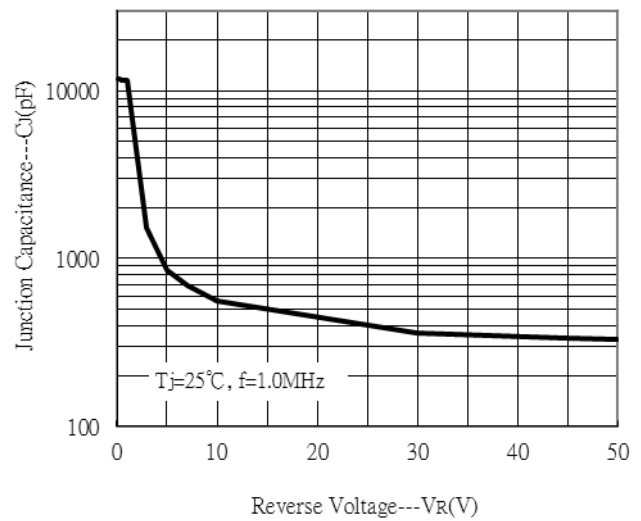
Forward Current vs Forward Voltage



Reverse Leakage Current vs Reverse Voltage

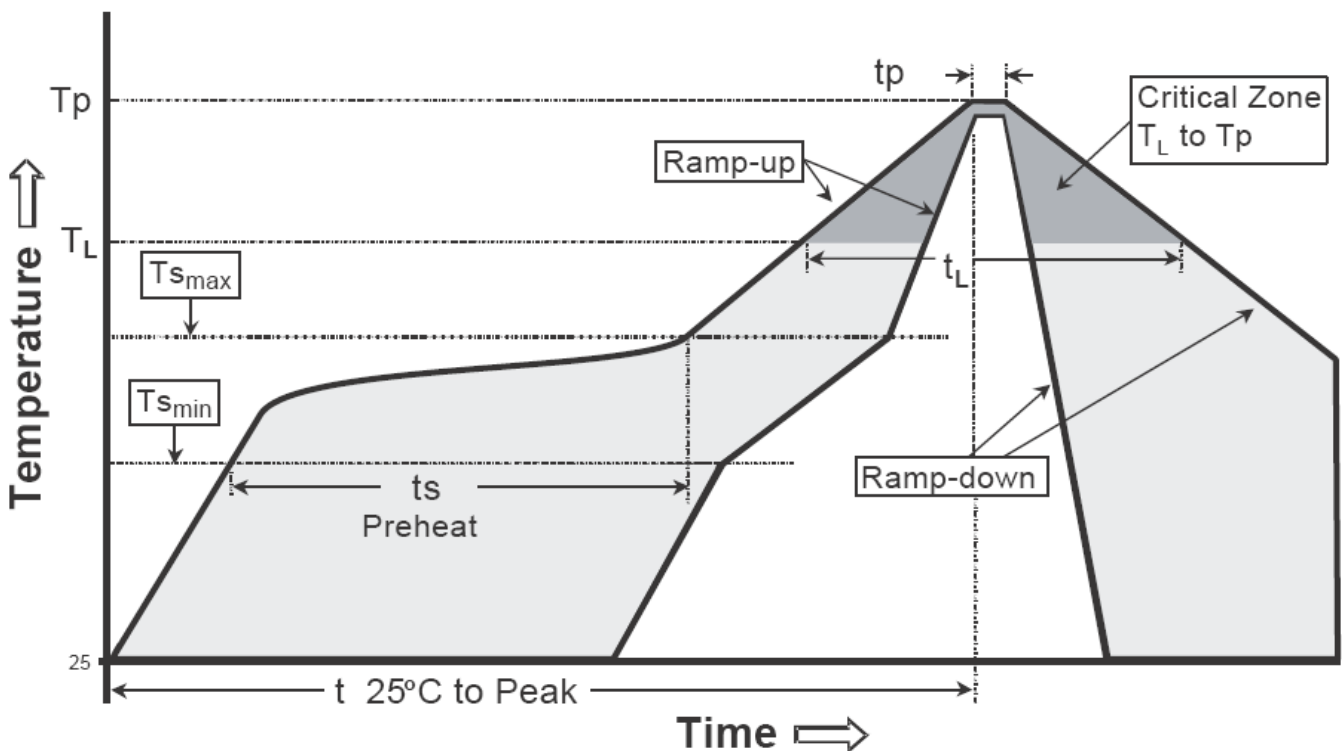


Junction Capacitance vs Reverse Voltage



Recommended wave soldering condition

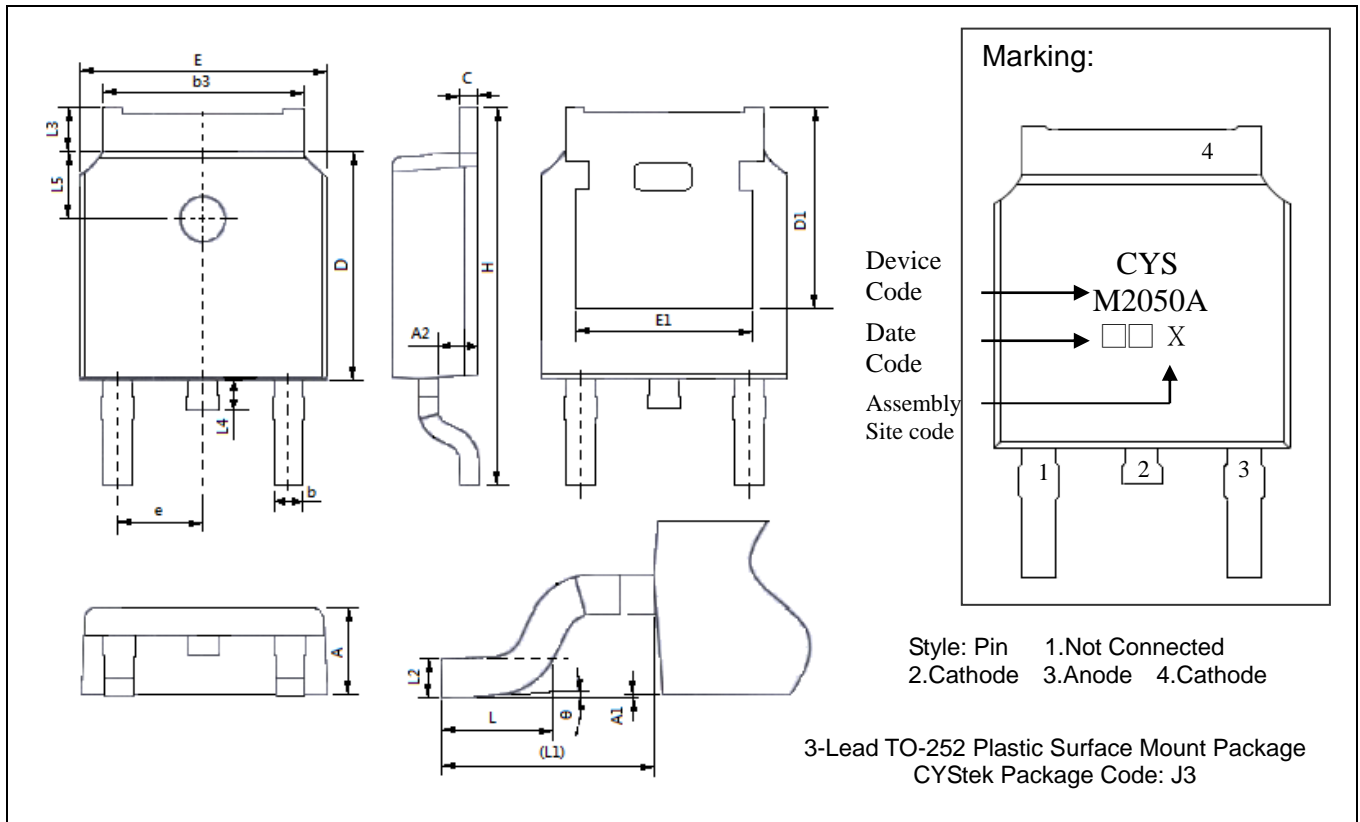
Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(Ts min)	100°C	150°C
-Temperature Max(Ts max)	150°C	200°C
-Time(ts min to ts max)	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (TL)	183°C	217°C
- Time (tL)	60-150 seconds	60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

TO-252 Dimension



DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.087	0.094	2.200	2.400	e	0.090	BSC	2.286	BSC
A1	0.000	0.008	0.000	0.200	H	0.370	0.413	9.400	10.500
A2	0.038	0.046	0.970	1.170	L	0.054	0.069	1.380	1.750
b	0.027	0.035	0.680	0.900	L1	0.114	REF	2.900	REF
b3	0.205	0.217	5.200	5.500	L2	0.020	BSC	0.510	BSC
c	0.017	0.025	0.430	0.630	L3	0.035	0.050	0.880	1.280
D	0.235	0.245	5.980	6.220	L4	-	0.039	-	1.000
D1	0.209	REF	5.300	REF	L5	0.065	0.077	1.650	1.950
E	0.252	0.268	6.400	6.800	θ	0°	8°	0°	8°
E1	0.182	-	4.630	-					

Notes: 1. Controlling dimension: millimeters.
 2. Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
 3. If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead : Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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