



P-Channel Enhancement Mode Power MOSFET

Description

The RM2A3P60S4 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

General Features

• $V_{DS} = -60V, I_D = -2.3A$

 $R_{DS(ON)} < 180 \text{m}\Omega$ @ V_{GS} =-10V $R_{DS(ON)} < 260 \text{m}\Omega$ @ V_{GS} =-5V

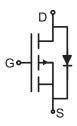
High density cell design for ultra low Rdson

• Fully characterized avalanche voltage and current

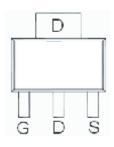
Excellent package for good heat dissipation

Application

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply
- Halogen-free
- P/N suffix V means AEC-Q101 qualified, e.g:RM2A3P60S4V



Schematic diagram



SOT-223 top view

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
2A3P60	RM2A3P60S4	SOT-223-3L	Ø330mm	12mm	2500 units

Absolute Maximum Ratings (T_A=25 ℃unless otherwise noted)

Dougnester Crumbal Limit Unit						
Parameter	Symbol	Limit	Unit			
Drain-Source Voltage	V _{DS}	-60	V			
Gate-Source Voltage	Vgs	±20	V			
Drain Current-Continuous	I _D	-2.3	Α			
Drain Current-Pulsed (Note 1)	I _{DM}	-12	Α			
Maximum Power Dissipation	P _D	1.5	W			
Operating Junction and Storage Temperature Range	T_{J}, T_{STG}	-55 To 150	℃			

Thermal Characteristic

Thermal Resistance, Junction-to-Ambient (Note 2)	R _{0JA} 85
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Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Symbol	bol Condition		Тур	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V I _D =-250μA	-60	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-48V,V _{GS} =0V	-	-	1	μA

Gate-Body Leakage Current	I _{GSS}	V _{GS} =±20V,V _{DS} =0V	-	-	±100	nA
On Characteristics (Note 3)			•			
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} ,I _D =-250 μA	-1.5	-2.0	-2.5	V
		V _{GS} =-10V, I _D =-2A	-	140	180	mΩ
Drain-Source On-State Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-1.5A	-	200	260	mΩ
Forward Transconductance	g FS	V _{DS} =-5V,I _D =-2A	-	5.3	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C _{lss}	\/ - 15\/\/ -0\/	-	428	600	PF
Output Capacitance	C _{oss}	V_{DS} =-15V, V_{GS} =0V, F=1.0MHz	-	39	55	PF
Reverse Transfer Capacitance	C _{rss}	7 F-1.0IVITIZ	-	26	36.4	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	t _{d(on)}		-	4.1	8.2	nS
Turn-on Rise Time	t _r	V_{DD} =-30V, I_{D} =-2A,	-	21	38	nS
Turn-Off Delay Time	$t_{d(off)}$	V_{GS} =-10V, R_{G} =3.3 Ω	-	20.3	40.6	nS
Turn-Off Fall Time	t _f		-	21	42	nS
Total Gate Charge	Qg	\/ - 40\/ - 24	-	8.3	11.6	nC
Gate-Source Charge	Q_{gs}	V_{DS} =-48V, I_{D} =-2A, V_{GS} =-10V	-	1.8	2.52	nC
Gate-Drain Charge	Q_{gd}	VGS10V	-	1.6	2.25	nC
Drain-Source Diode Characteristics	·		·	•		
Diode Forward Voltage (Note 3)	V _{SD}	V _{GS} =0V,I _S =-1A	-	-	-1.2	V
Diode Forward Current (Note 2)	Is		-	-	-2.3	Α

Notes:

- 1. Repetitive Rating: Pulse width limited by maximum junction temperature.
- **2.** Surface Mounted on FR4 Board, $t \le 10$ sec.
- **3.** Pulse Test: Pulse Width \leq 300 μ s, Duty Cycle \leq 2%.
- **4.** Guaranteed by design, not subject to product



RATING AND CHARACTERISTICS CURVES (RM2A3P60S4)

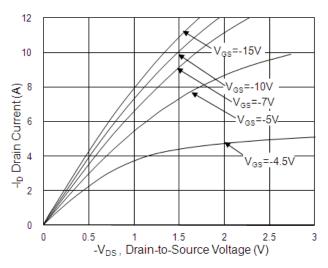


Fig.1 Typical Output Characteristics

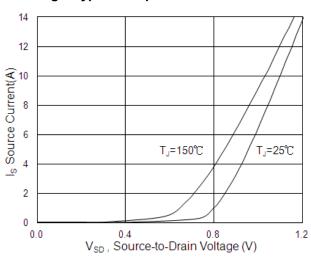


Fig.3 Forward Characteristics Of Reverse

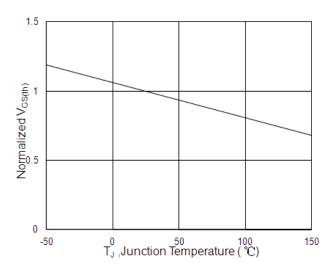


Fig.5 Normalized V_{GS(th)} vs. T_J

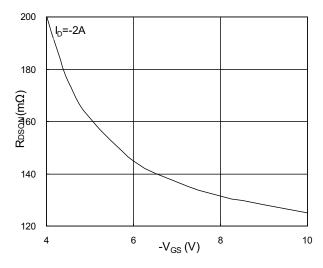


Fig.2 On-Resistance vs. Gate-Source Voltage

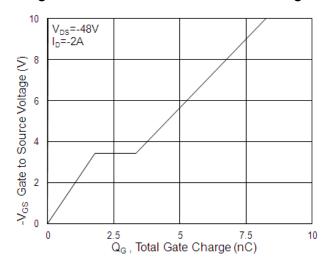


Fig.4 Gate-Charge Characteristics

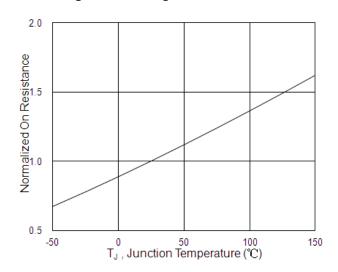
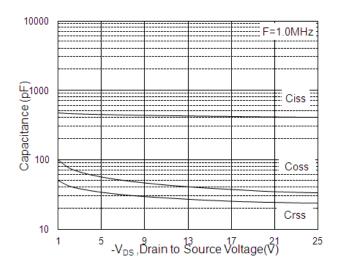


Fig.6 Normalized R_{DSON} vs. T_J



RATING AND CHARACTERISTICS CURVES (RM2A3P60S4)



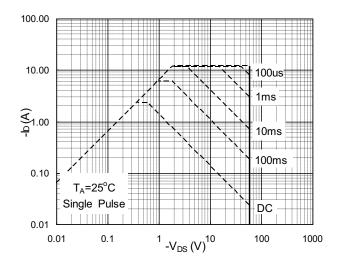


Fig.7 Capacitance

Fig.8 Safe Operating Area

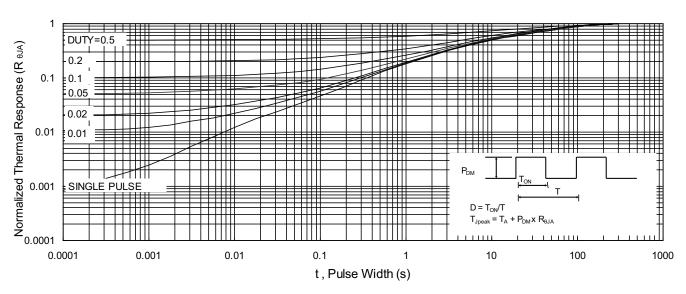


Fig.9 Normalized Maximum Transient Thermal Impedance

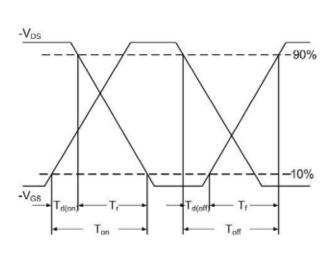


Fig.10 Switching time waveform

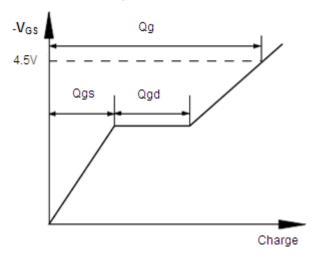
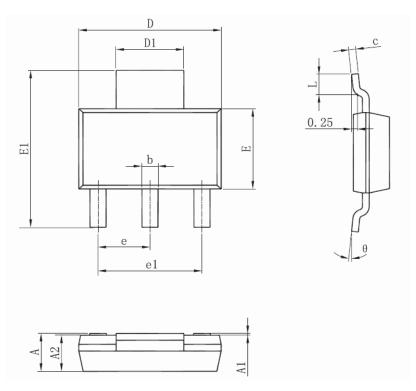


Fig.11 Gate Charge waveform



SOT-223 Package Information



Courb o I	Dimensions Ir	n Millimeters	Dimensions In Inches		
Symbol	Min	Max	Min	Max	
Α	1.520	1.800	0.060	0.071	
A1	0.000	0.100	0.000	0.004	
A2	1.500	1.700	0.059	0.067	
b	0.660	0.820	0.026	0.032	
С	0.250	0.350	0.010	0.014	
D	6.200	6.400	0.244	0.252	
D1	2.900	3.100	0.114	0.122	
E	3.300	3.700	0.130	0.146	
E1	6.830	7.070	0.269	0.278	
е	2.300	(BSC)	0.091(BSC)		
e1	4.500	4.700	0.177	0.185	
L	0.900	1.150	0.035	0.045	
θ	0°	10°	0°	10°	

Notes

- 1. All dimensions are in millimeters.
- 2. Tolerance ±0.10mm (4 mil) unless otherwise specified
- 3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
- 4. Dimension L is measured in gauge plane.
- 5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.



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