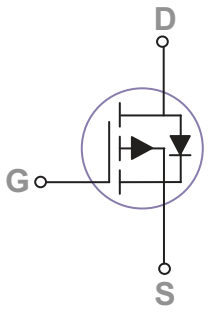
RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

RM7A6P60S6

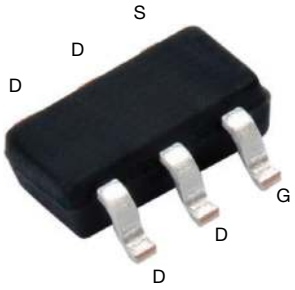
P-Channel Enhancement Mode Power MOSFET

Description

The RM7A6P60S6 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.0V.This device is suitable for use as a load switch or in PWM applications.



Schematic diagram



SOT-23-6 top view

General Features

- V_{DS} = -60V,I_D = -7.6A
  $R_{DS(ON)}$ < 130mΩ @ V_{GS}=-4.5V
  $R_{DS(ON)}$ < 105mΩ @ V_{GS}=-10V
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

- PWM applications
- Load switch
- Power management
- Halogen-free

Package Marking And Ordering Information

Device Marking	Device	Package	Packaging Code	Reel Size	Quantity(Pcs)	Carton(Pcs)
7A6P60	RM7A6P60S6	SOT-23-6	-T	7inch	3000	120000

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

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-60	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous	I_D	-7.6	A
Drain Current-Pulsed (Note 1)	I_{DM}	-30	A
Maximum Power Dissipation	P_D	1.85	W
Operating Junction and Storage Temperature Range	T_J,T_{STG}	-55 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Case	$R_{\theta Jc}$	15	℃/W

Electrical Characteristics (TA=25℃unless otherwise noted)

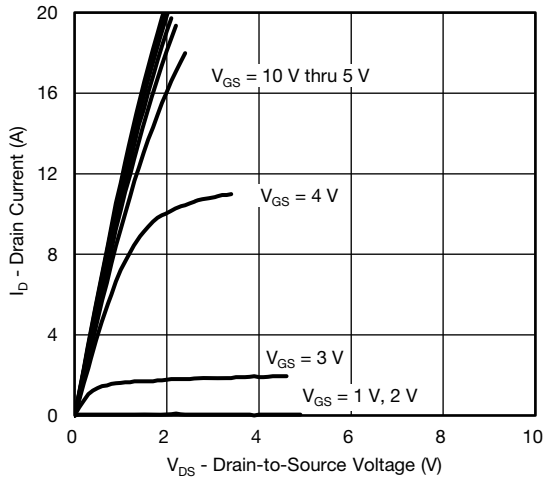
Parameter	Symbol	Condition	Min	Typ	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V I_D=-250μA	-60			V

Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-60V,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=-250μA	-1.5	-2.0	-2.5	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D =-4.5A	-	85	105	mΩ
		V_{GS}=-4.5V, I_D=-3.5A	-	105	130	mΩ
Forward Transconductance	g_{FS}	V_{DS}=-15V,I_D=-4A	-	9	-	S
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-30V,V_{GS}=0V, F=1.0MHz	-	934	-	PF
Output Capacitance	C_{oss}		-	44	-	PF
Reverse Transfer Capacitance	C_{rss}		-	37	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-30V,I_D=-2A V_{GS}=-10V,R_{GEN}=6Ω	-	8.4	-	nS
Turn-on Rise Time	t_r		-	23	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	109	-	nS
Turn-Off Fall Time	t_f		-	48	-	nS
Total Gate Charge	Q_g	V_{DS}=-30V,I_D=-2A,V_{GS}=-10V	-	16	-	nC
Gate-Source Charge	Q_{gs}		-	3.8	-	nC
Gate-Drain Charge	Q_{gd}		-	1.8	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-2A	-	-	-1.3	V

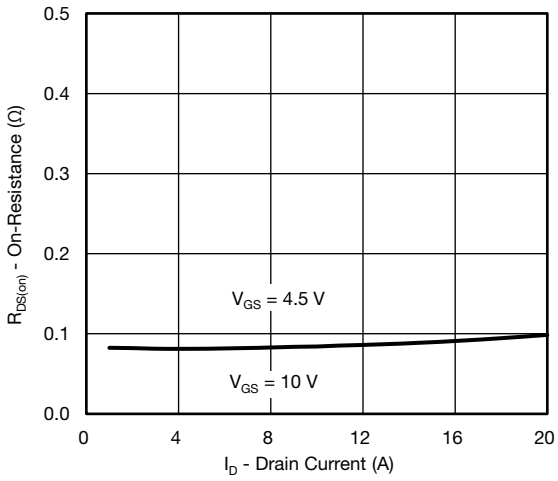
Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

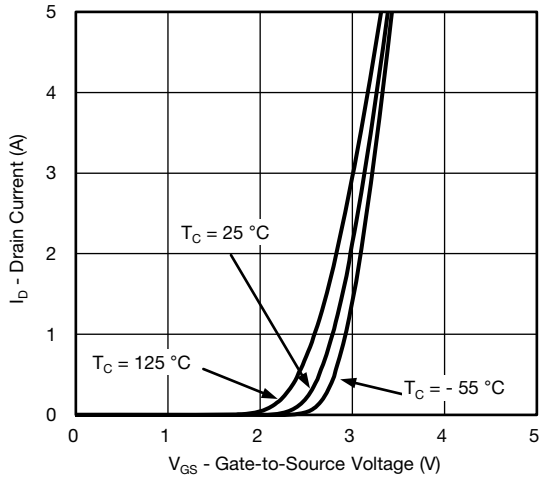
RATING AND CHARACTERISTICS CURVES (RM7A6P60S6)



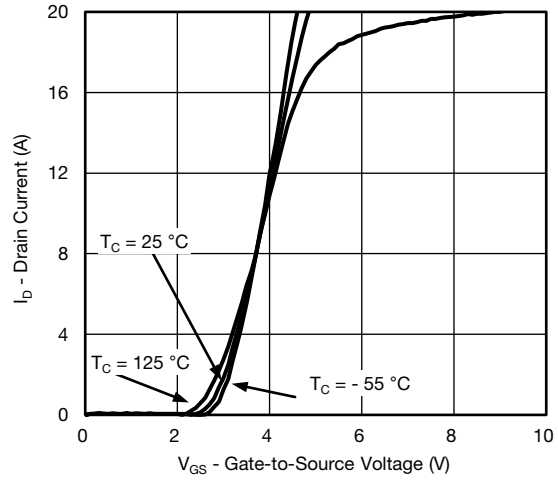
Output Characteristics



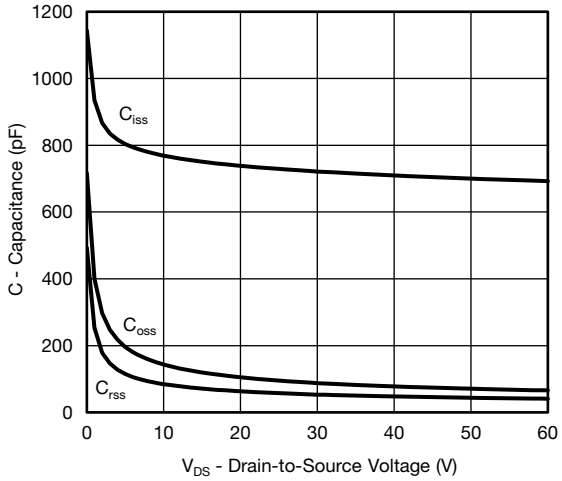
On-Resistance vs. Drain Current and Gate Voltage



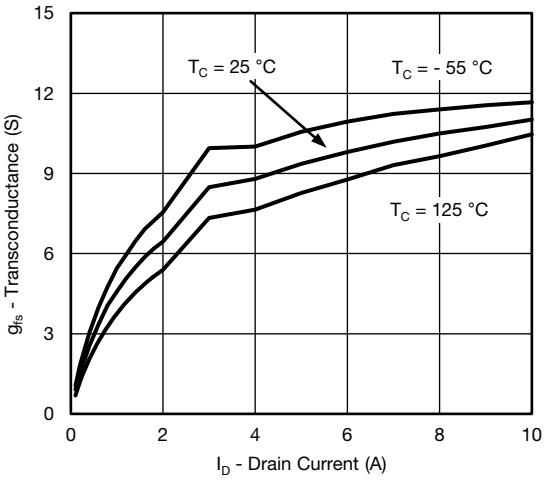
Transfer Characteristics



Transfer Characteristics

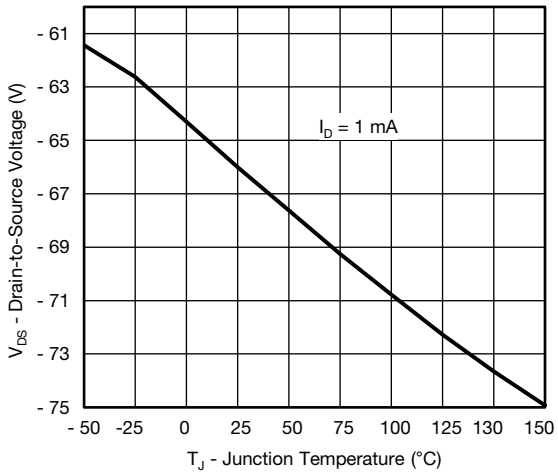


Capacitance

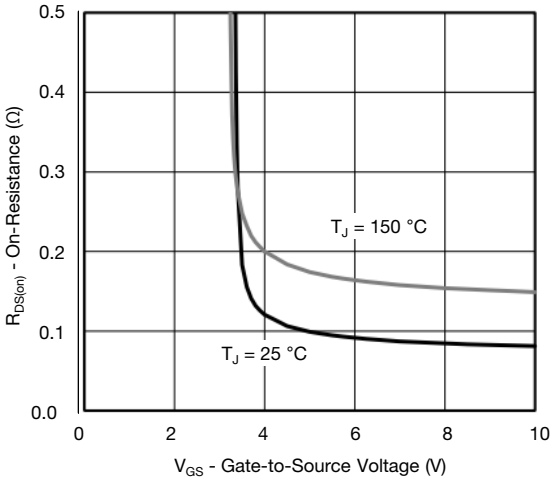


Transconductance

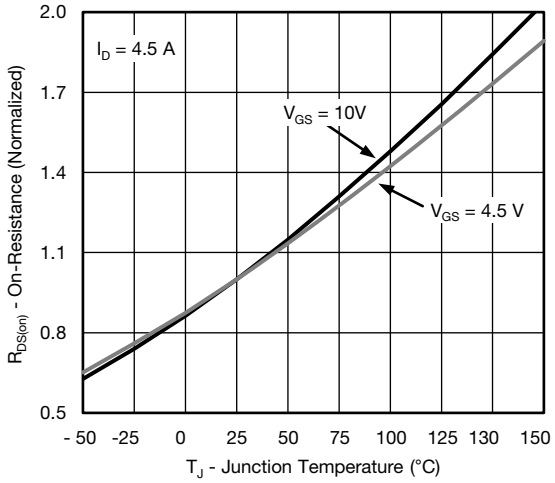
RATING AND CHARACTERISTICS CURVES (RM7A6P60S6)



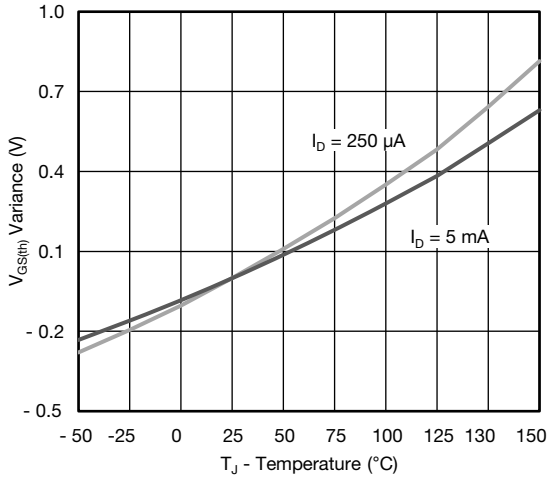
Drain-to-Source Voltage vs. Junction Temperature



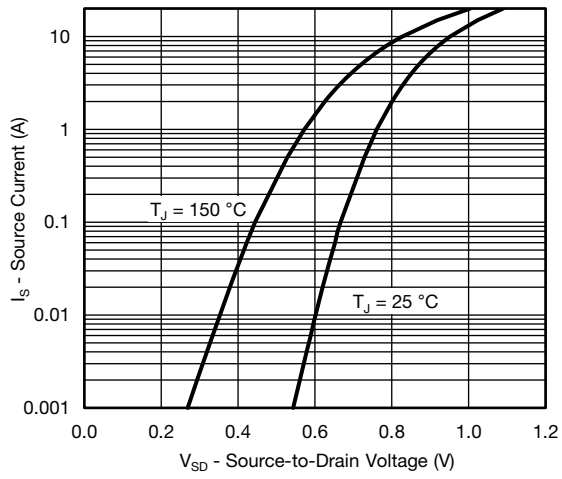
On-Resistance vs. Gate-to-Source Voltage



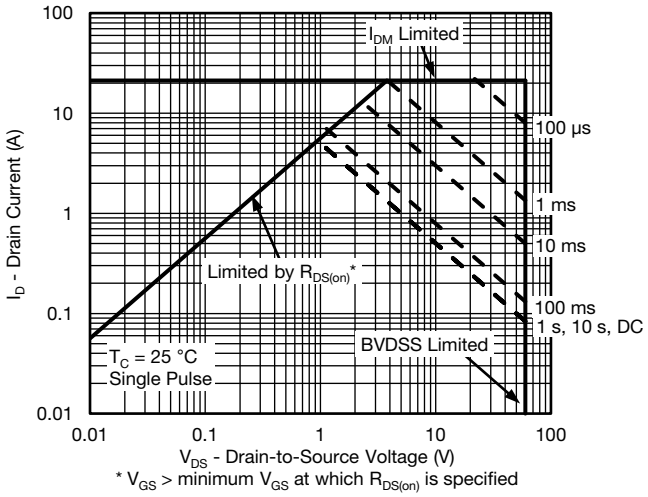
On-Resistance vs. Junction Temperature



Threshold Voltage

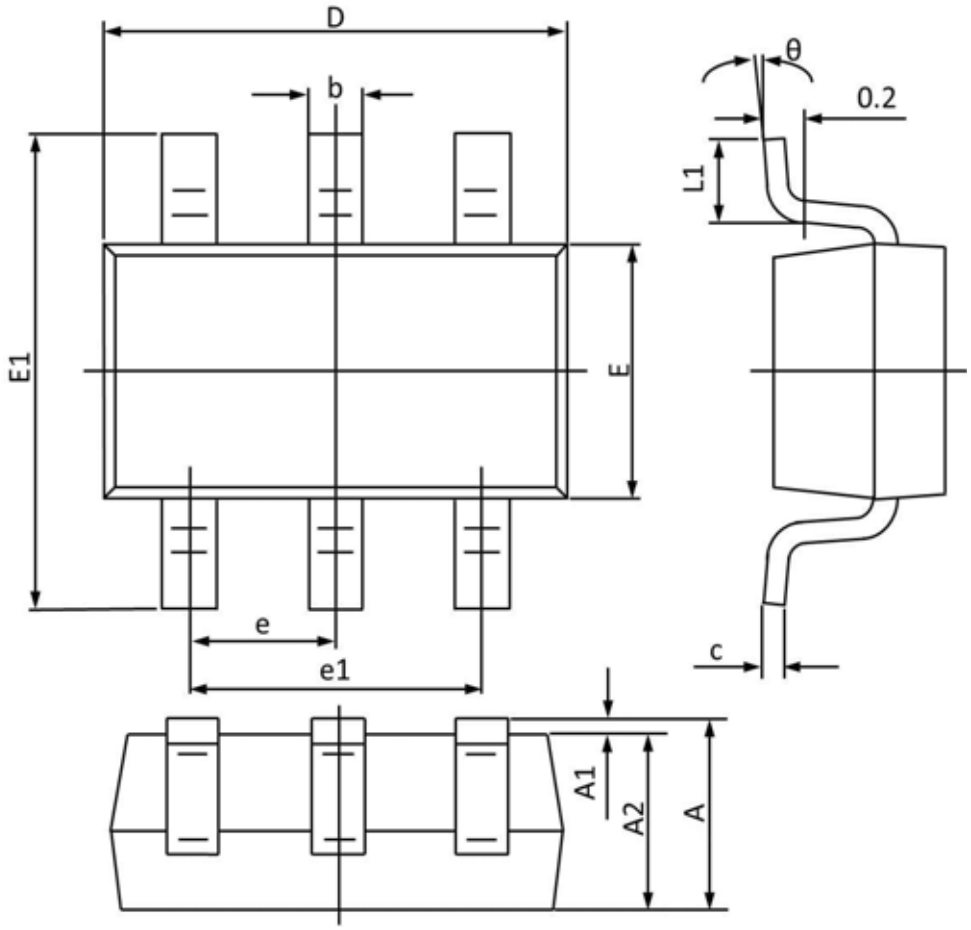


Source-Drain Diode Forward Voltage



Safe Operating Area, Junction-to-Ambient

SOT23-6 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	1.450	-	0.057	-
A1	0.100	0.000	0.004	0.000
A2	1.300	1.050	0.051	0.041
b	0.500	0.300	0.020	0.012
c	0.200	0.100	0.008	0.004
D	3.100	2.700	0.122	0.106
E	1.800	1.400	0.071	0.055
E1	3.000	2.600	0.118	0.102
e	0.95BSC		0.037BSC	
e1	2.000	1.800	0.079	0.071
L1	0.600	0.300	0.024	0.012
θ	10°	0°	10°	0°

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