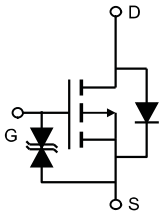
RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

RMA7P20ED1

P-Channel Trench MOSFET

Description

The RMA7P20ED1 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a load switch



Schematic diagram

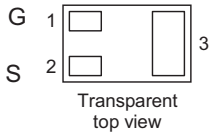
General Features

- V_{DS} = -20V,I_D = -0.7A

$R_{DS(ON)}$ < 0.60Ω @ V_{GS}=-2.5V

$R_{DS(ON)}$ < 0.42Ω @ V_{GS}=-4.5V

- Lead free product is acquired
- Surface mount package
- Halogen-free



DFN1006-3

Application

- Load switch

Package Marking And Ordering Information

Device Marking	Device	Device Package	Packaging Code	Reel Size	Quantity (PCS)
1605	RMA7P20ED1	DFN1006-3	-T	7inch	10000

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±8	V
Continuous Drain Current (T_J =150℃)	T_c =25℃	I_D	-0.7	A
	T_c =70 ℃		-0.55	
Drain Current-Pulsed (Note 1)		I_{DM}	-2	A
Maximum Power Dissipation		P_D	0.9	W
Operating Junction and Storage Temperature Range		T_J,T_{STG}	-50 To 150	℃

Thermal Characteristic

Thermal Resistance,Junction-to-Ambient (Note 2)	$R_{\theta JA}$	100	℃/W

Electrical Characteristics (T_A=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	-20	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V,V_{GS}=0V	-	-	-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±8V,V_{DS}=0V	-	-	±100	nA
On Characteristics (Note 3)						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS},I_D=-250μA	-0.45	-0.6	-1.0	V
Drain-Source On-State Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-0.5A		360	420	mΩ
		V_{GS}=-2.5V, I_D=-0.3A		400	500	
Forward Transconductance	g_{FS}	V_{DS}=-5V,I_D=-0.3A				
Dynamic Characteristics (Note4)						
Input Capacitance	C_{lss}	V_{DS}=-4V,V_{GS}=0V, F=1.0MHz	-	52	-	PF
Output Capacitance	C_{oss}		-	12	-	PF
Reverse Transfer Capacitance	C_{rss}		-	8.2	-	PF
Switching Characteristics (Note 4)						
Turn-on Delay Time	$t_{d(on)}$	V_{DD}=-4V,I_D=-0.3A , R_L=-1.2Ω,V_{GEN}=-4.5V,R_g=1Ω	-	6	-	nS
Turn-on Rise Time	t_r		-	5	-	nS
Turn-Off Delay Time	$t_{d(off)}$		-	23	-	nS
Turn-Off Fall Time	t_f		-	8	-	nS
Total Gate Charge	Q_g	V_{DS}=-4V,I_D=-0.5A,V_{GS}=-4.5V	-	0.8	-	nC
Gate-Source Charge	Q_{gs}		-	0.16	-	nC
Gate-Drain Charge	Q_{gd}		-	0.2	-	nC
Drain-Source Diode Characteristics						
Diode Forward Voltage (Note 3)	V_{SD}	V_{GS}=0V,I_S=-0.5A	-	-	-1.2	V
Diode Forward Current (Note 2)	I_S		-	-	0.7	A

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 (RMA7P20ED1)

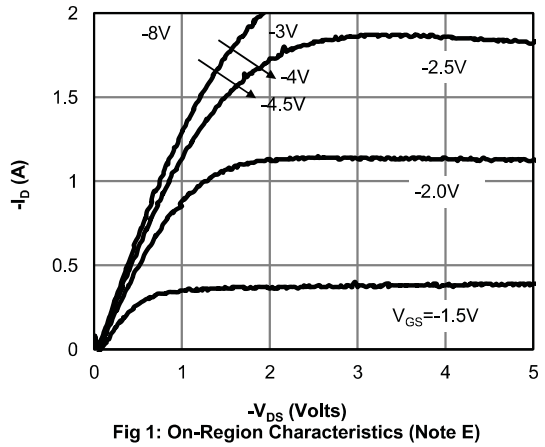


Fig 1: On-Region Characteristics (Note E)

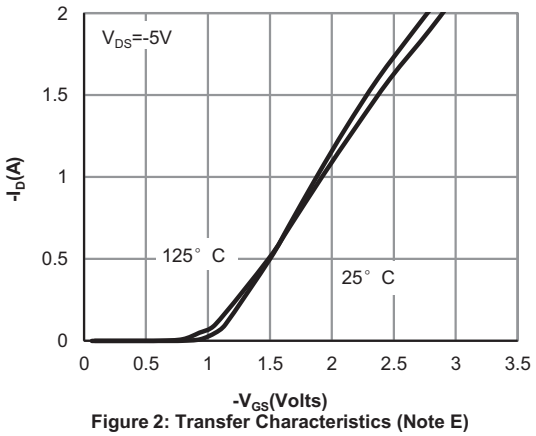


Figure 2: Transfer Characteristics (Note E)

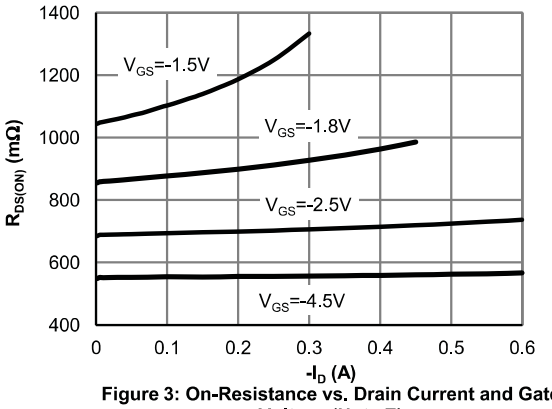


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

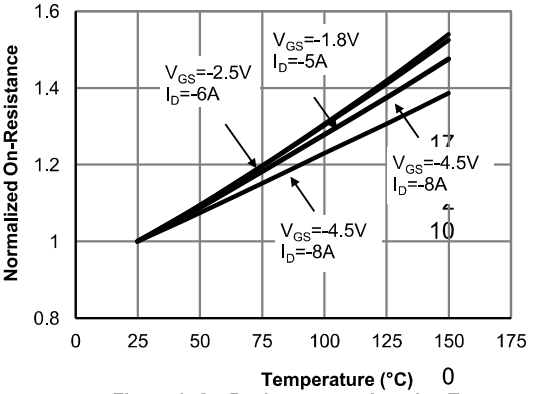


Figure 4: On-Resistance vs. Junction Temperature (Note E)

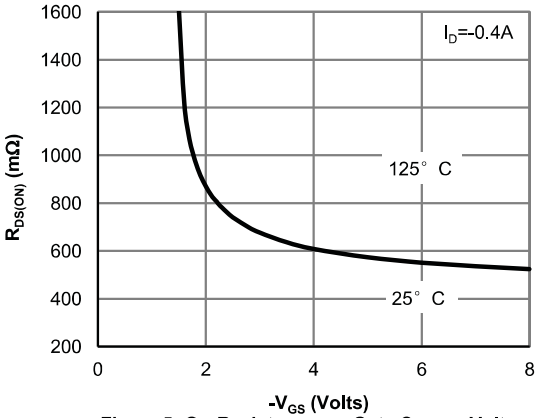


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

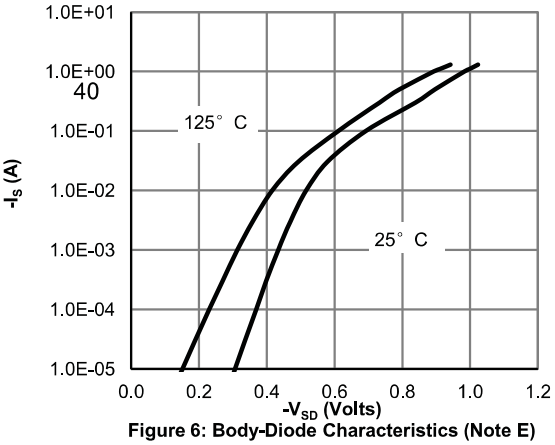


Figure 6: Body-Diode Characteristics (Note E)

RATING AND CHARACTERISTICS CURVES (RMA7P20ED1)

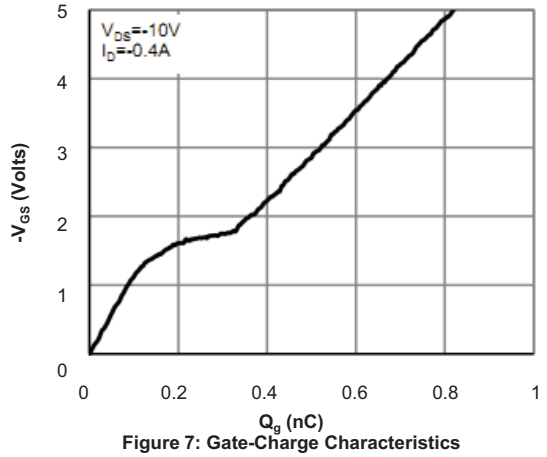


Figure 7: Gate-Charge Characteristics

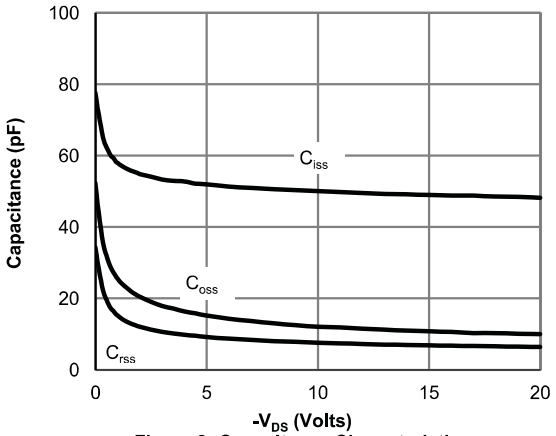


Figure 8: Capacitance Characteristics

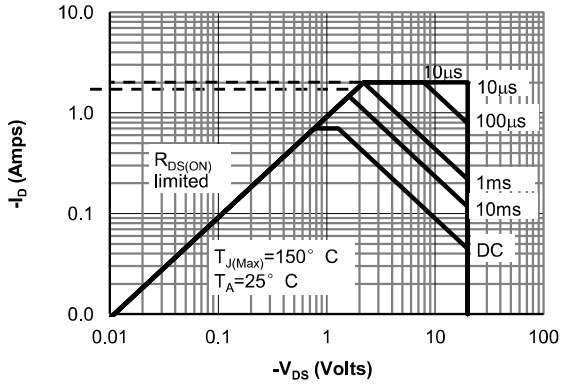


Figure 9: Maximum Forward Biased Safe Operating Area (Note B)

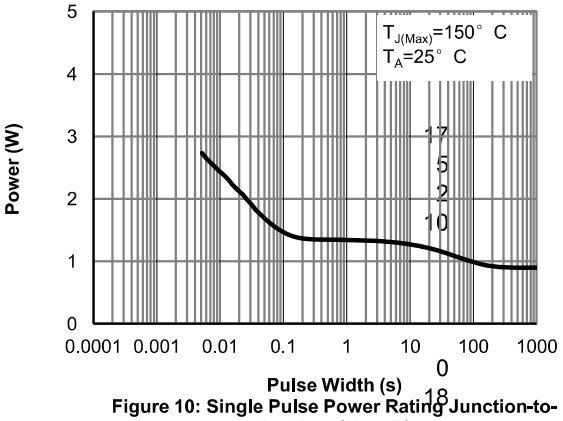


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note B)

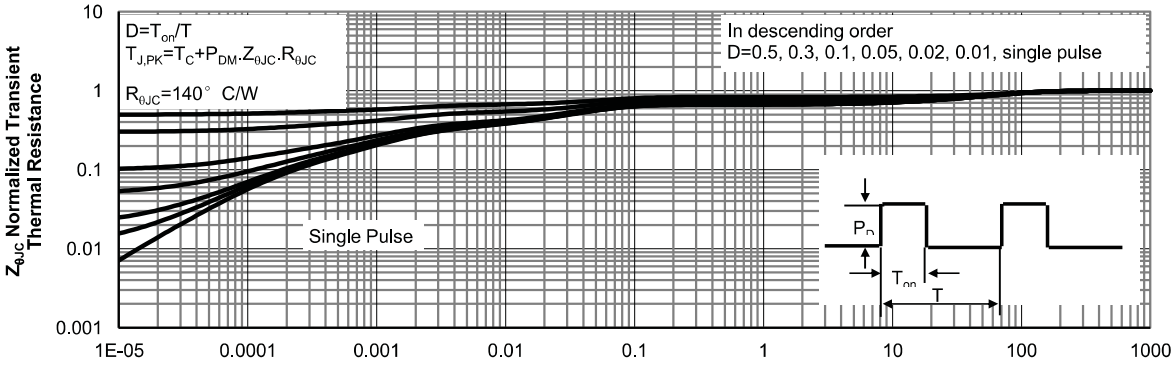
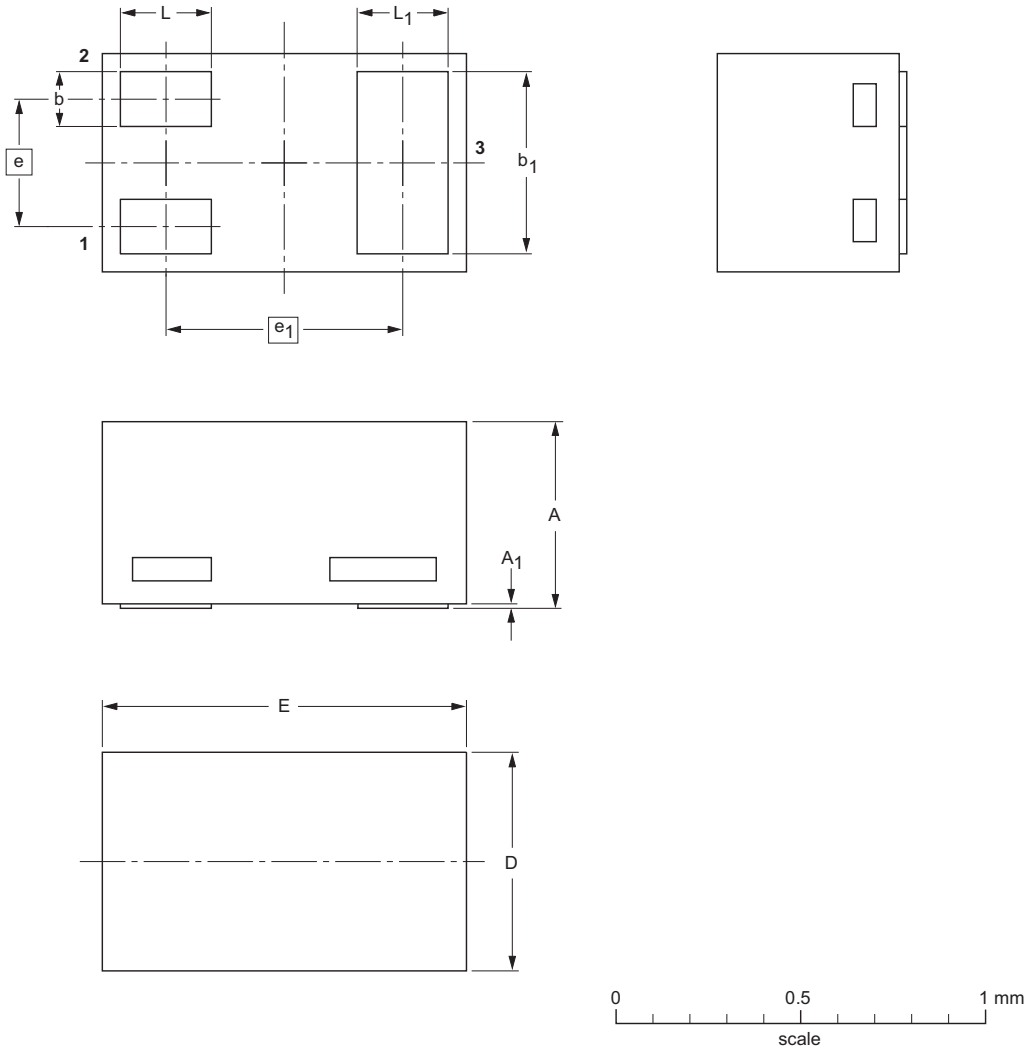


Figure 11: Normalized Maximum Transient Thermal Impedance (Note B)

DFN1006-3 Package Information



DIMENSIONS (mm are the original dimensions)

UNIT	A(1)	A1 max.	b	b1	D	E	e	e1	L	L1
mm	0.50 0.46	0.03	0.20 0.12	0.55 0.47	0.62 0.55	1.02 0.95	0.35	0.65	0.30 0.22	0.30 0.22

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