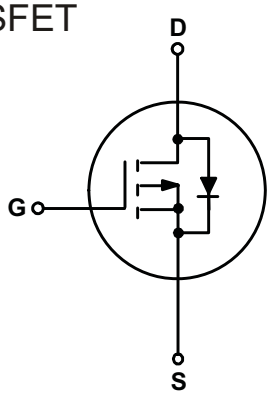
RECTRON SEMICONDUCTOR
TECHNICAL SPECIFICATION

RM20P100LD

P-Channel Enhancement Mode Power MOSFET

Description

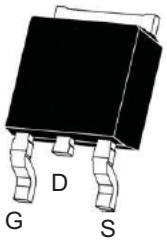
The RM20P100LD uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge .This device is well suited for high current load applications.



Schematic diagram

General Features

- V_{DS} =-100V,I_D =-20A
  $R_{DS(ON)}$ <180mΩ @ V_{GS}=-10V
  $R_{DS(ON)}$ <190mΩ @ V_{GS}=-4.5V
- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Good stability and uniformity with high E_{AS}
- Excellent package for good heat dissipation



TO-252-2L top view

Application

- Load switch
- Halogen-free

100% UIS TESTED!

100% ΔVds TESTED!

Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
20P10	RM20P100LD	TO-252-2L	-	-	-

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

Symbol	Parameter	Conditions	Min	Max	Unit
V_{DS}	Drain-Source Voltage	T_C = 25 ℃	-100	-	V
V_{GS}	Gate-Source Voltage	T_C = 25 ℃	-	± 20	V
I_D	Drain Current (DC)	T_C= 25 ℃, V_{GS} = -10 V	-	- 20	A
I_{DM} (Note 1)	Drain Current (Pulsed)	T_C = 25 ℃, V_{GS}= -10 V	-	- 44	A
P_{tot}	Drain power dissipation	T_C = 25 ℃	-	35	W
T_{stg}	Storage Temperature		-55	150	℃
T_J	Junction Temperature		-	150	℃
I_S	Diode Forward Current	T_C = 25 ℃	-	- 20	A
$R_{\theta JA}$ (Note 2)	Thermal Resistance- Junction to Ambient		-	62.5	℃/W
$R_{\theta JC}$ (Note 3)	Thermal Resistance- Junction to Case		-	2.5	

Notes：

1 Pulse width ≤ 300 μs, duty cycle ≤ 2 %
2 Mounted on PCB of 1 in^2 pad area
3 Mounted on Large Heat Sink

2023-02/113
REV:A

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}= 0 V, I_{DS}= - 250 μA	- 100	-	-	V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_{DS}= - 250 μA	- 1.0	-	- 2.5	V
I_{DSS}	Drain Leakage Current	V_{DS}= - 80V , V_{GS}= 0 V	-	-	- 1.0	μA
I_{GSS}	Gate Leakage Current	V_{GS}= 0 V, V_{GS}= ± 20 V	-	-	±100	nA
$R_{DS(ON)}$[a]	On-State Resistance	V_{GS}= - 10 V, I_{DS}= - 2 A	-	165	180	mΩ
		V_{GS}= - 4.5 V, I_{DS}= - 1 A	-	175	190	
Diode Characteristics						
V_{SD}[a]	Diode Forward Voltage	I_{SD} = - 2 A, V_{GS}= 0 V	-	-	- 1.3	V
t_{rr}	Reverse Recovery Time	I_{SD} = - 6 A, dI_{SD} / dt = 100 A / μs	-	40	-	nS
Q_{rr}	Reverse Recovery Charge		-	28	-	nC
Dynamic Characteristics[b]						
C_{iss}	Input Capacitance	V_{GS} = 0 V, V_{DS} = - 50 V Frequency = 1 MHz	-	1545	-	pF
C_{oss}	Output Capacitance		-	37	-	
C_{rss}	Reverse Transfer Capacitance		-	25	-	
t_d(on)	Turn-on Delay Time	V_{DS} = - 50 V, V_{GEN}= - 10 V, R_G = 4.5 Ω, R_L = 25 Ω, I_{DS} = - 2 A	-	10	-	nS
t_r	Turn-on Rise Time		-	27	-	
t_d(off)	Turn-off Delay Time		-	288	-	
t_f	Turn-off Fall Time		-	88	-	
Gate Charge Characteristics[b]						
Q_g	Total Gate Charge	V_{DS}= - 50 V, V_{GS} = - 10 V, I_{DS} = - 2 A	-	27	-	nC
Q_{gs}	Gate-Source Charge		-	5.3	-	
Q_{gd}	Gate-Drain Charge		-	3.2	-	

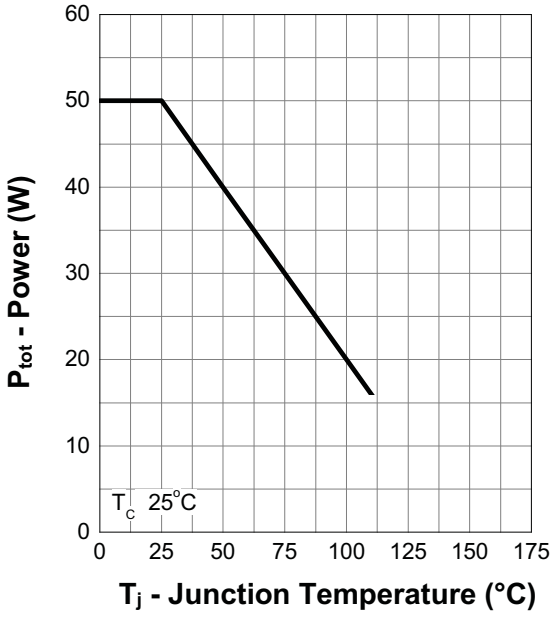
Notes：

a : Pulse test ; pulse width ≤ 300 μs, duty cycle ≤ 2%

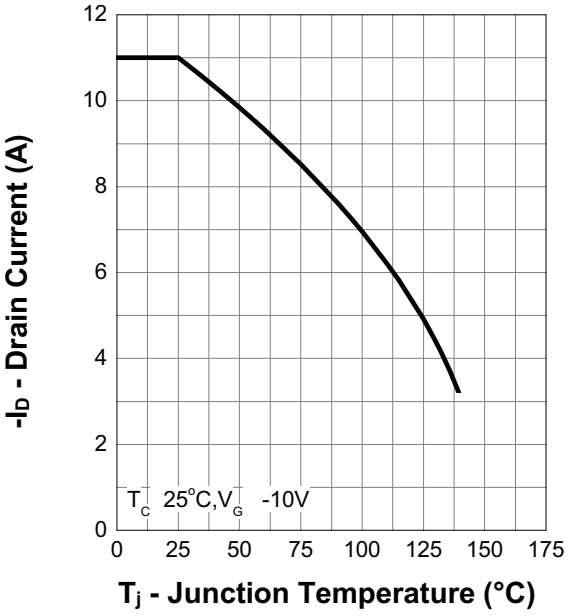
b : Guaranteed by design, not subject to production testing

RATING AND CHARACTERISTICS CURVES (RM20P100LD)

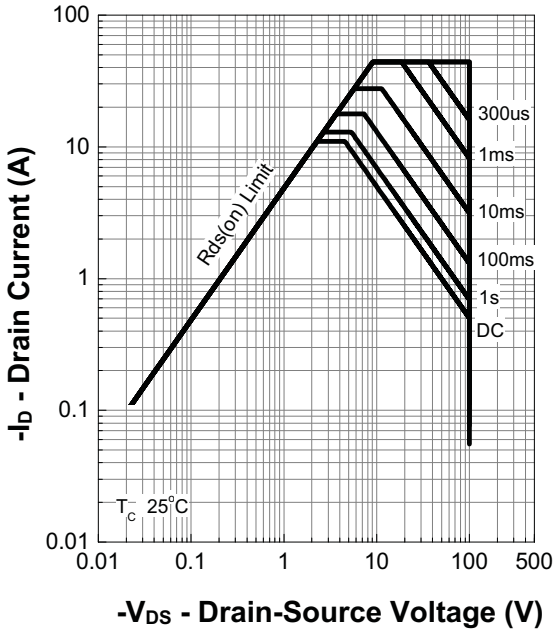
Power Capability



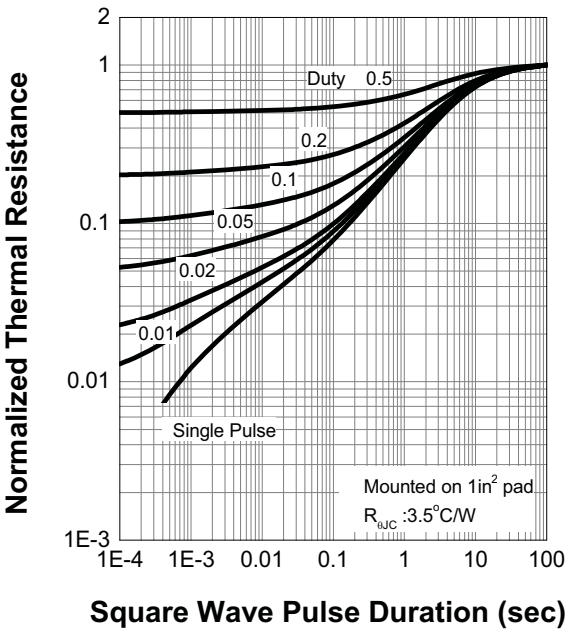
Current Capability



Safe Operation Area

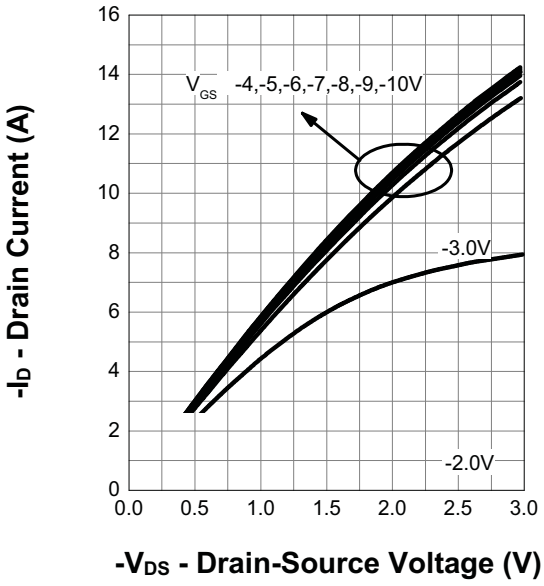


Transient Thermal Impedance

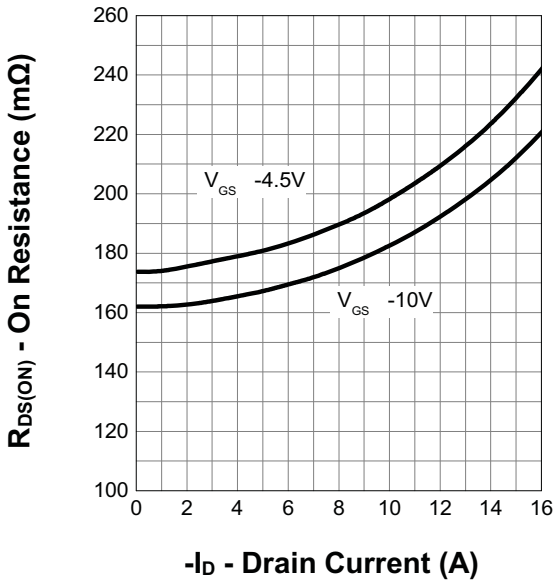


RATING AND CHARACTERISTICS CURVES (RM20P100LD)

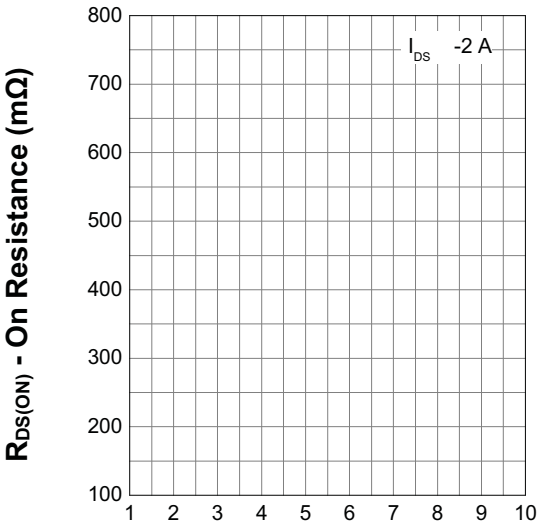
Output Characteristics



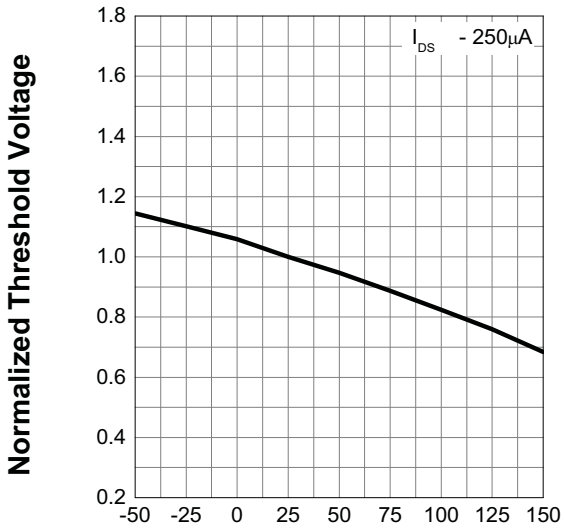
Drain-Source On Resistance



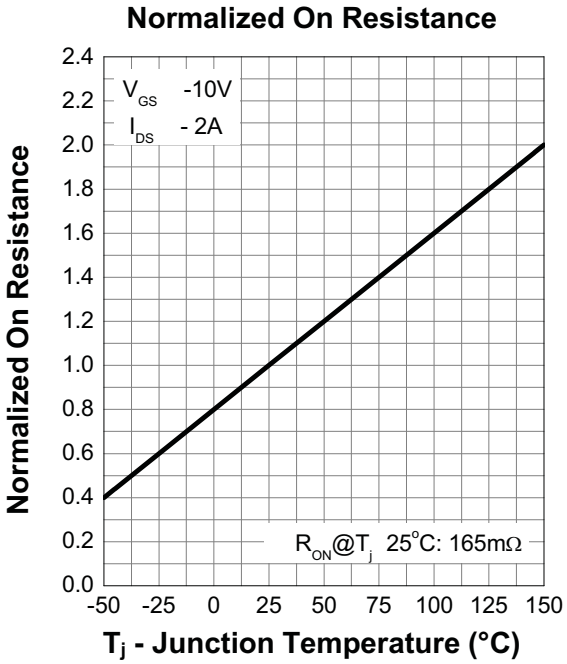
Transfer Characteristics

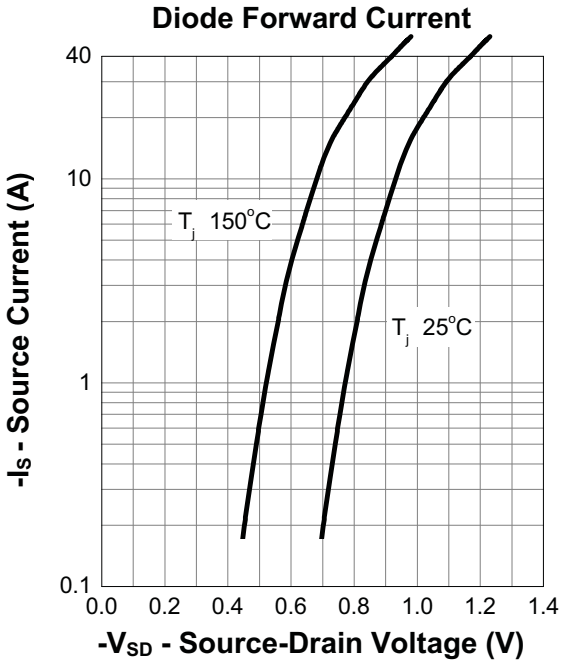


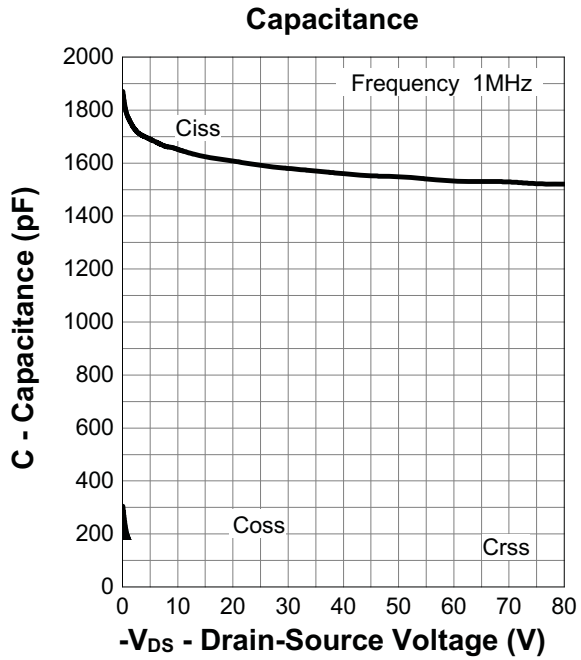
Normalized Threshold Voltage

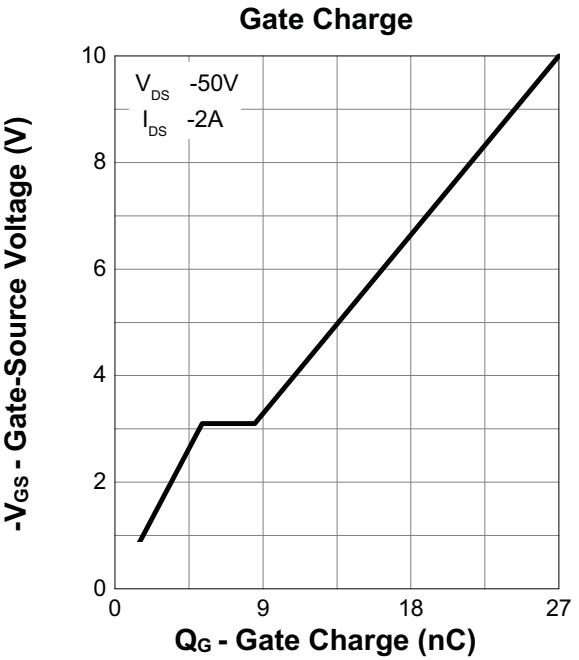


RATING AND CHARACTERISTICS CURVES (RM20P100LD)

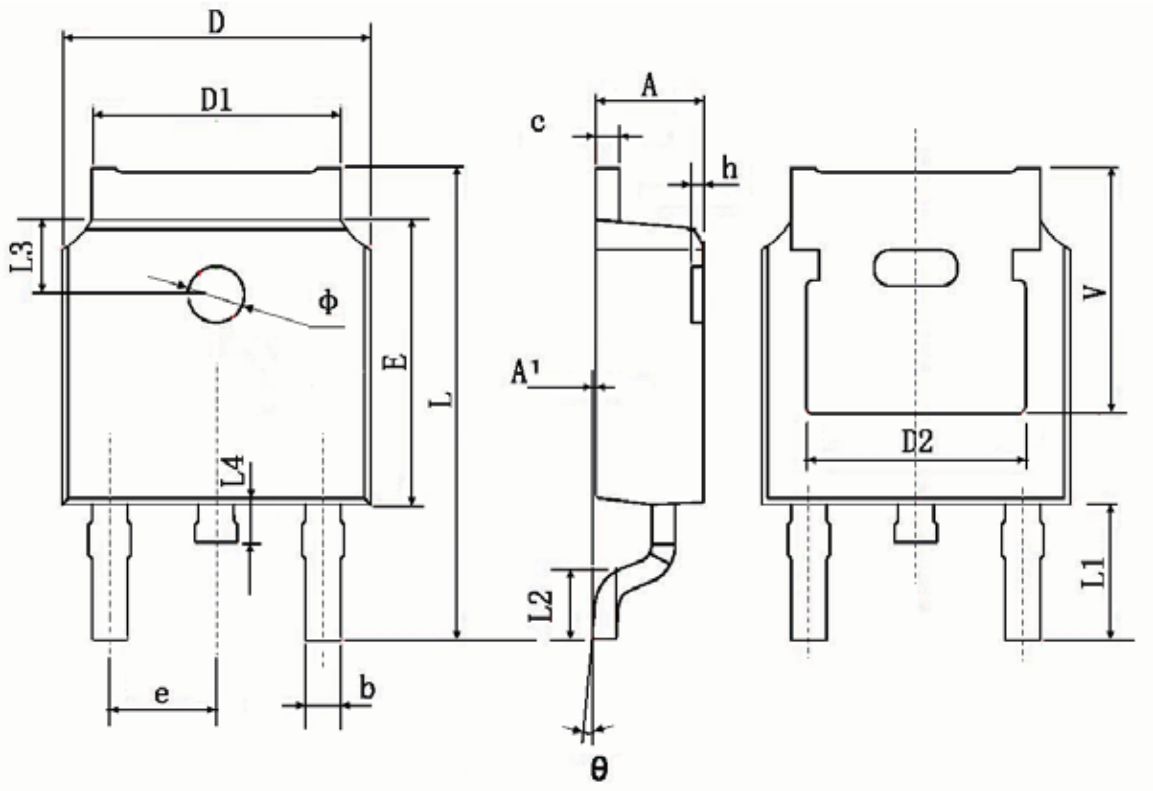








TO-252 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	0.483 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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