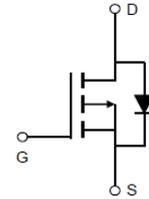


P-Channel Enhancement Mode Power MOSFET

Description

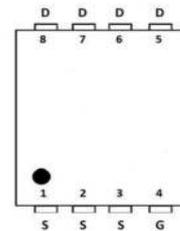
The RM45P20D3 uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.



Feature

- -20V,-55A
 $R_{DS(ON)}$ TYP=5.8m Ω @ $V_{GS}=4.5V$
 $R_{DS(ON)}$ TYP=7.8m Ω @ $V_{GS}=2.5V$
- Advanced Trench Technology
- Lead free product is acquired
- Excellent $R_{DS(ON)}$ and Low Gate Charge

Schematic Diagram



Pin Assignment



DFN 3.3x3.3 EP top view

Application

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

Package Marking and Ordering Information

Device Marking	Device	Device Package	Packaging Code	Reel Size	Quantity(PCS)
45P20	RM45P20D3	DFN3.3x3.3 EP	-W	13inch	5000

Absolute Maximum Ratings ($T_C=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 12	V
Continuous Drain Current ($T_J=25^\circ\text{C}$)	I_D	-55	A
Continuous Drain Current ($T_J=100^\circ\text{C}$)	I_D	-32	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	-200	A
Single Pulsed Avalanche Energy ⁽⁴⁾	EAS	43	mJ
Power Dissipation	P_D	42	W
Thermal Resistance from Junction to Case	$R_{\theta JC}$	3.0	$^\circ\text{C/W}$
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55~ +150	$^\circ\text{C}$

Electrical Characteristics (T_C=25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)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} = ±12V, V _{DS} = 0V	-	-	±100	nA
Gate threshold voltage ⁽²⁾	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	0.35	0.65	1.0	V
Drain-source on-resistance ⁽²⁾	R _{DS(on)}	V _{GS} = -4.5V, I _D = -15A	-	5.8	7.6	mΩ
		V _{GS} = -2.5V, I _D = -10A	-	7.8	10	
Dynamic characteristics						
Input Capacitance	C _{iss}	V _{DS} = -10V, V _{GS} = 0V, f = 1MHz	-	2790	-	pF
Output Capacitance	C _{oss}		-	310	-	
Reverse Transfer Capacitance	C _{rss}		-	270	-	
Switching characteristics						
Turn-on delay time	t _{d(on)}	V _{DD} = -4.5V, I _D = -15A V _{GS} = -4.5V, R _G = 3Ω	-	13	-	ns
Turn-on rise time	t _r		-	105	-	
Turn-off delay time	t _{d(off)}		-	145	-	
Turn-off fall time	t _f		-	150	-	
Total Gate Charge	Q _g	V _{DS} = -4.5V, I _D = -15A, V _{GS} = -4.5V	-	54	-	nC
Gate-Source Charge	Q _{gs}		-	7	-	
Gate-Drain Charge	Q _{gd}		-	14	-	
Source-Drain Diode characteristics						
Diode Forward voltage ⁽²⁾	V _{DS}	V _{GS} = 0V, I _S = -10A	-	-	-1.2	V
Diode Forward current ⁽³⁾	I _S		-	-	-55	A

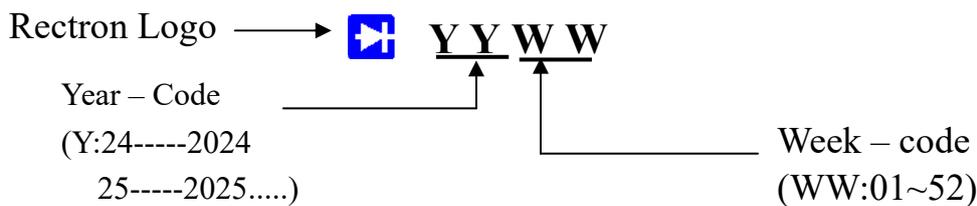
Notes:

1. Repetitive Rating: pulse width limited by maximum junction temperature
2. Pulse Test: pulse width ≤ 300μs, duty cycle ≤ 2%
3. Surface Mounted on FR4 Board, t ≤ 10 sec
4. EAS condition: V_{DD} = -10V, V_G = -10V, R_G = 25 Ω, L = 0.5mH, I_{AS} = 13A



RECTRON

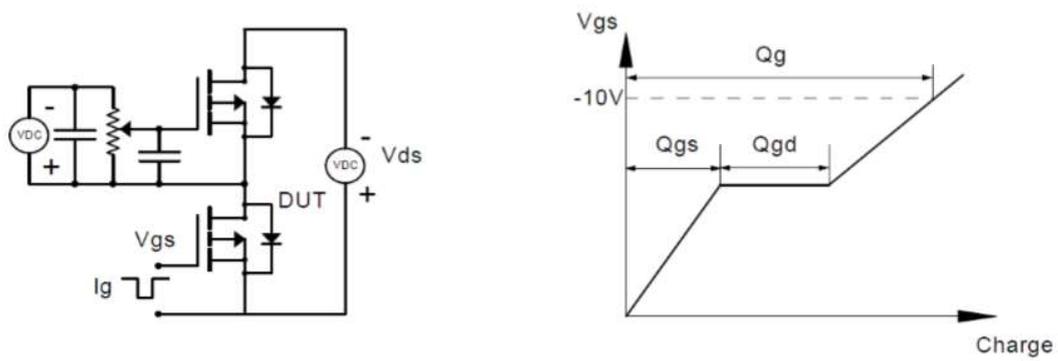
Marking on the body



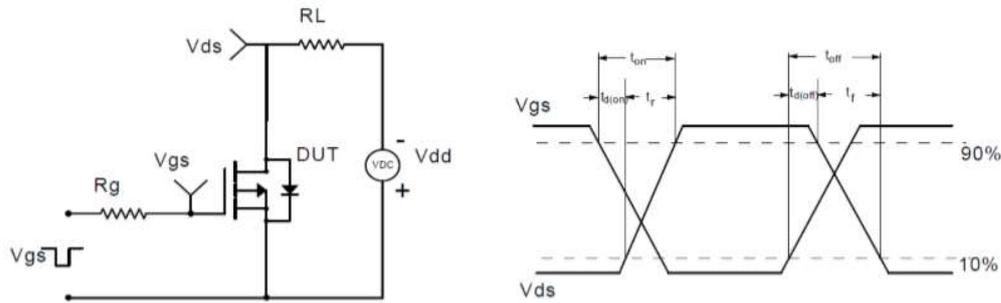
45 P 2 0 ← Part No.

Test Circuit

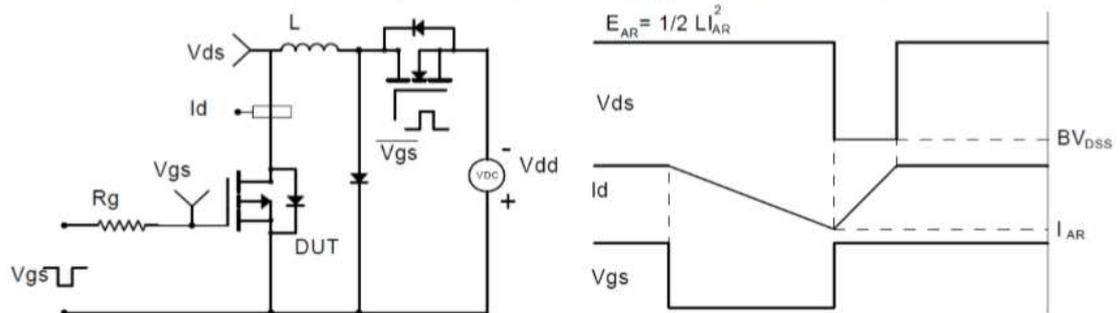
Gate Charge Test Circuit & Waveform



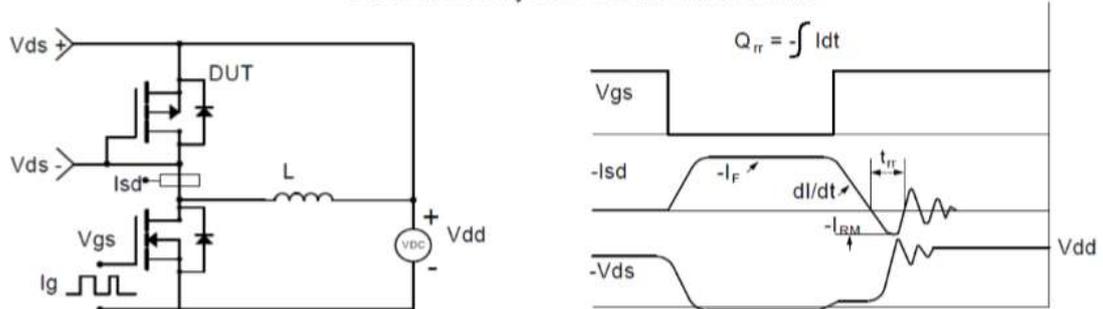
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



RATING AND CHARACTERISTICS CURVES (RM45P20D3)

Figure 1: Output Characteristics

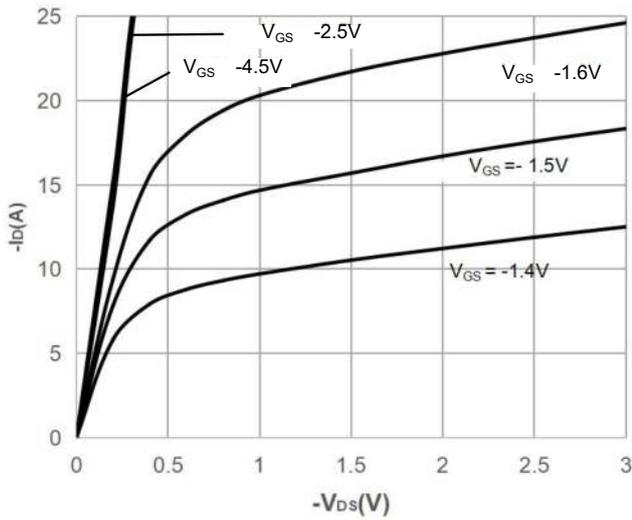


Figure 2: Typical Transfer Characteristics

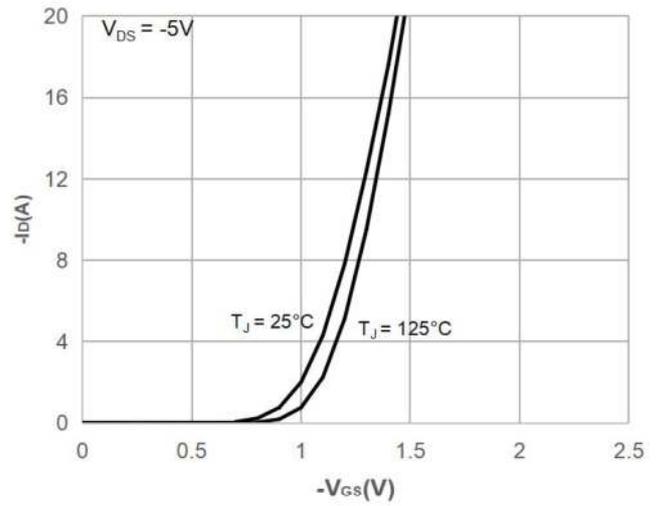


Figure 3: On-resistance vs. Drain Current

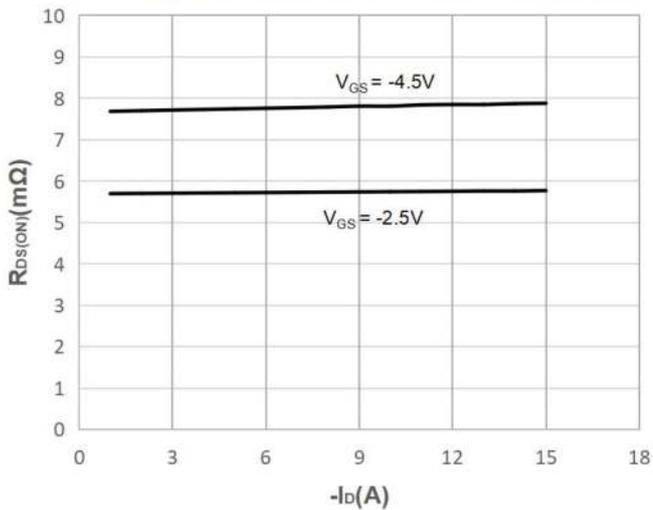


Figure 4: Body Diode Characteristics

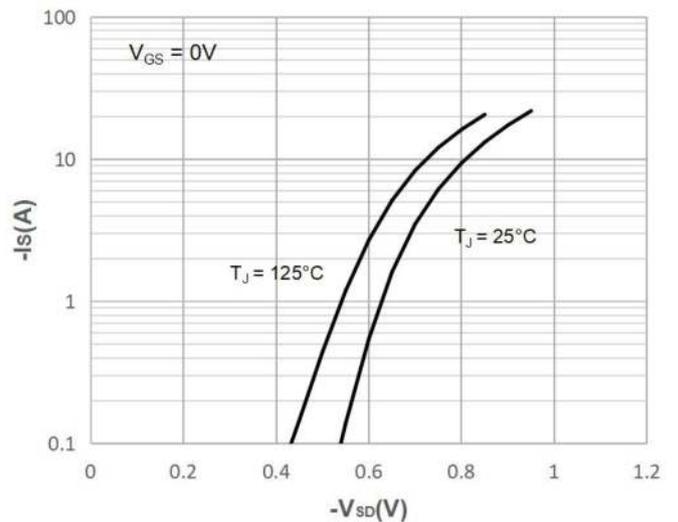


Figure 5: Gate Charge Characteristics

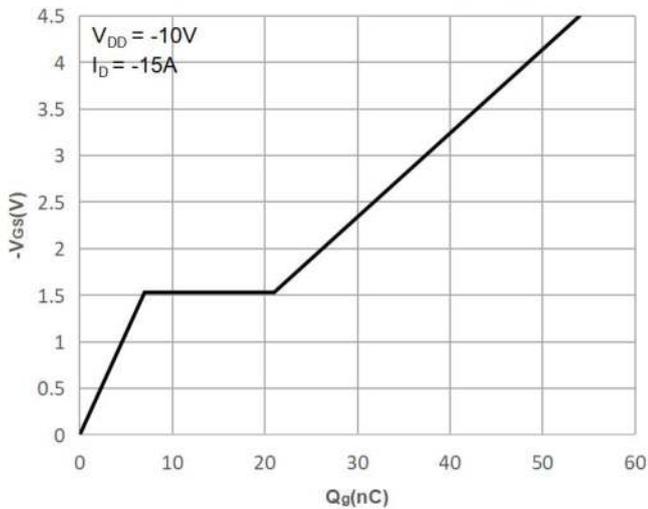
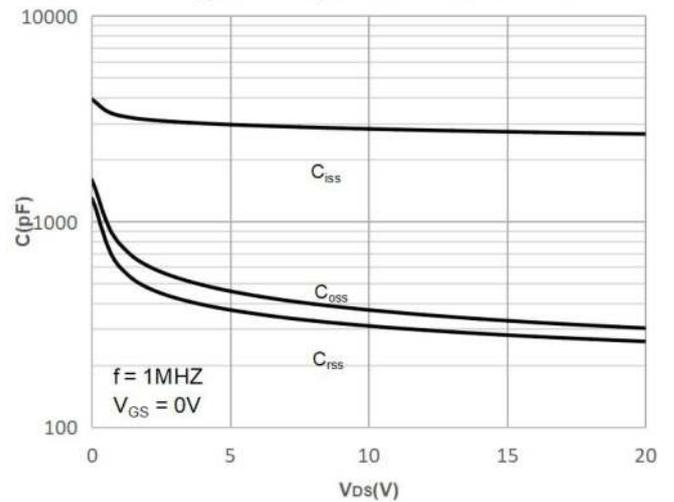


Figure 6: Capacitance Characteristics



RATING AND CHARACTERISTICS CURVES (RM45P20D3)

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

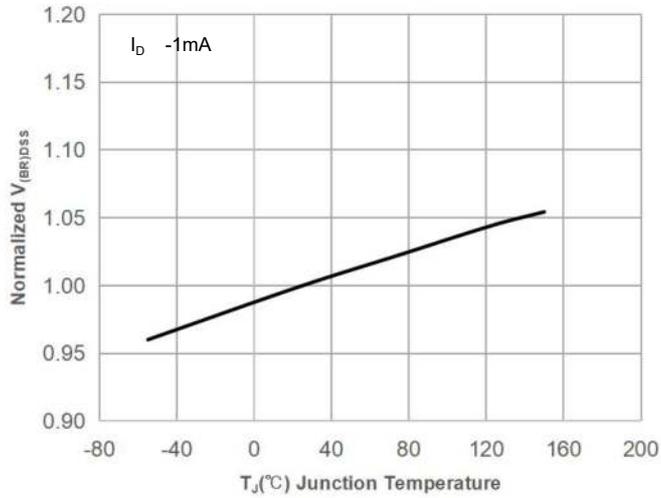


Figure 8: Normalized on Resistance vs. Junction Temperature

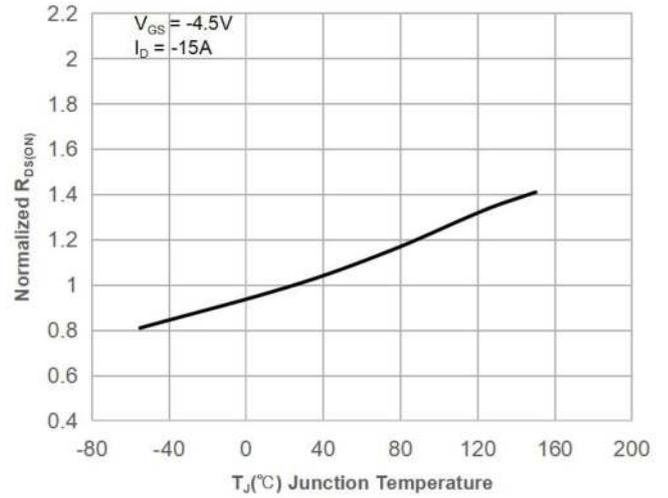


Figure 9: Maximum Safe Operating Area

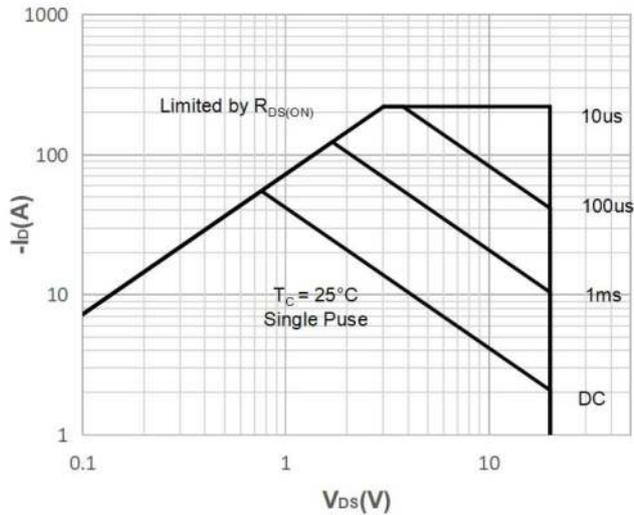


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

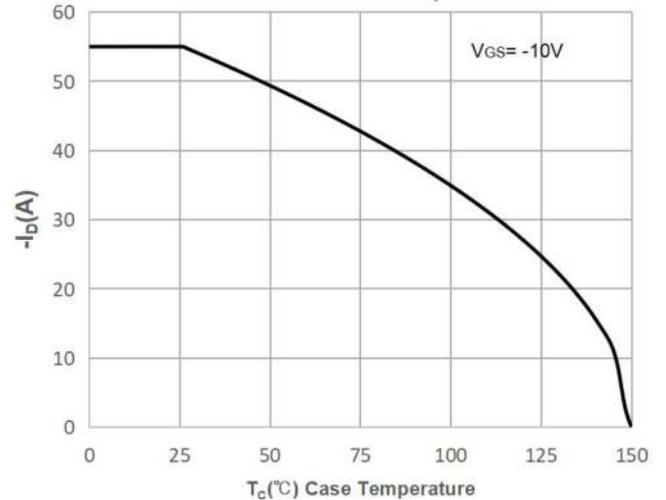


Figure 11: Normalized Maximum Transient Thermal Impedance

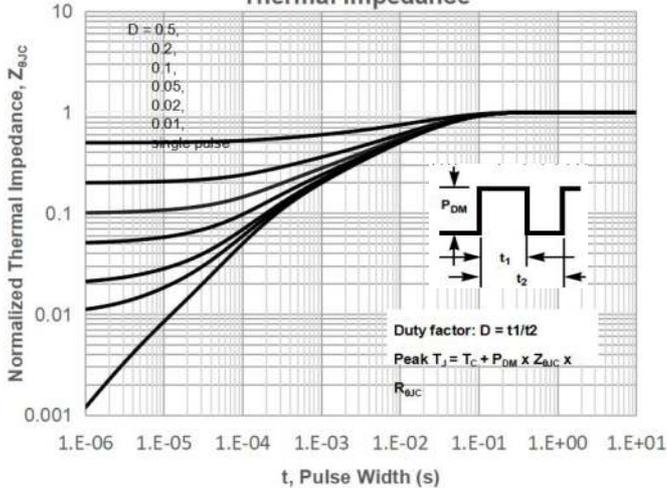
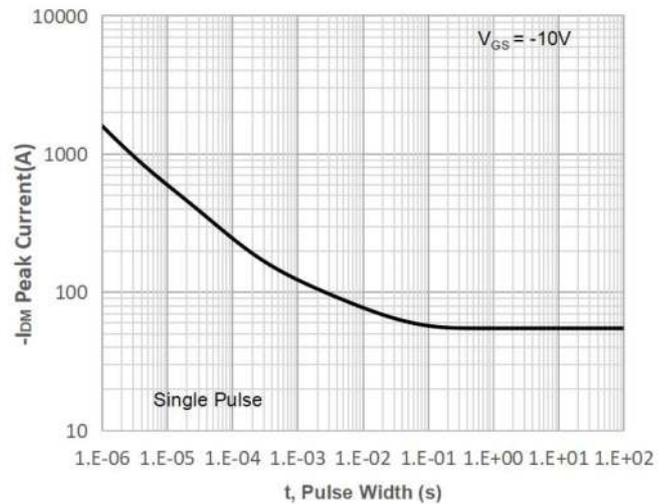


Figure 12: Peak Current Capacity



DFN3.3X3.3 EP Package Information

封装外形尺寸图				
	符号	单位: mm		
		MIN	MAX	TYP
	A	0.75	0.85	0.8
	B	0.25	0.35	0.3
	C	0.18	0.22	0.2
	D	3.2	3.3	3.25
	E	3.2	3.3	3.25
	F	2.2	2.5	2.35
	G	1.8	2.0	1.9
	H	0.3	0.4	0.35
	I	0.15	0.25	0.2
	J	0.4	0.5	0.45
	K	0.6	0.7	0.65
	L	1.38	1.58	1.48
	M	1.8	2.1	1.95
N	0.15*45°			
O	0.4	0.5	0.45	

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