Etek Microelectronics

EM03P115R

P-Channel MOSFET

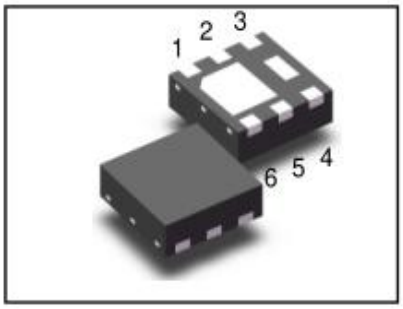
Features

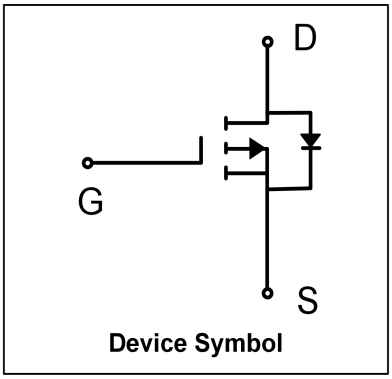
- V_{DS}= -30V, I_D = -11.5A
  $R_{DS(on)}$ < 22mΩ @ V_{GS} = -10V
  $R_{DS(on)}$ < 33mΩ @ V_{GS} = -4.5V
- High Power and Current Handing Capability
- Fast Switching Speed
- Surface Mount Package

Mechanical Characteristics

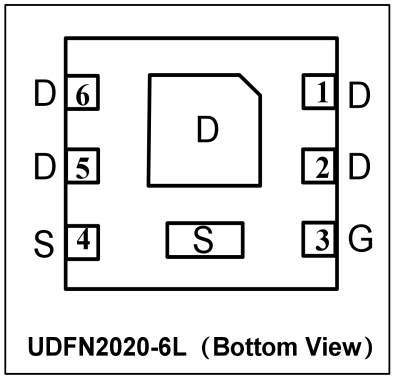
- UDFN2020-6L Package
- Marking : Making Code
- RoHS Compliant
- MSL1

Schematic & PIN Configuration





Device Symbol



UDFN2020-6L（Bottom View）

Absolute Maximum Rating

Parameter	Symbol	Value	Unit
Drain-Source breakdown voltage	V_{DS}	-30	V
Gate-Source voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	-11.5	A
Pulsed Drain Current[1]	I_{DM}	-45	A
Power Dissipation	P_D	2.9	W
Junction Temperature	T_J	150	°C
Storage Temperature	T_{STG}	-55 to 150	°C
Thermal Resistance from Junction to Ambien[2]	$R_{\theta JA}$	43	°C/W

Electrical Characteristics (T_{amb}=25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -30V, V_{GS} = 0V	-	-	-1	μA
Gate-Body Leakage current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
Gate-Threshold Voltage[3]	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1.0	-1.6	-3.0	V
Drain-Source On-Resistance[3]	$R_{DS(on)}$	V_{GS} = -10V, I_D = -9.1A	-	15	22	mΩ
		V_{GS} = -4.5V, I_D = -6.9A	-	21	33	
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{GS} =0V, V_{DS}= -15V, f =1MHz	-	1410	-	pF
Output Capacitance	C_{oss}		-	180	-	
Reverse Transfer Capacitance	C_{rss}		-	153	-	
Switching Characteristics						
Total Gate Charge[4]	Q_g	V_{GS}= -4.5V, I_D = -9.1A, V_{DS} = -15V	-	18	-	nC
Gate-Source Charge[4]	Q_{gs}		-	5.2	-	
Gate-Drain Charge[4]	Q_{gd}		-	6.7	-	
Turn-on Delay Time[4]	$t_{d(on)}$	V_{GS} =-10V V_{DD} = -15V, , R_G = 1Ω, R_L = 15Ω, I_D = -1A	-	10	-	nS
Rise Time[4]	t_r		-	15	-	
Turn-off Delay Time[4]	$t_{d(off)}$		-	53	-	
Fall Time[4]	t_f		-	12	-	
Source-Drain Diode Characteristics						
Diode Forward Voltage	V_{SD}	I_S = -1A, V_{GS} = 0V	-	-	-1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface mounted on FR4 board using 1 square inch pad size,1oz single-side copper.
3. Pulse Test: Pulse width≤300μs, duty cycle≤2%.
4. Guaranteed by design, not subject to product

Typical Characteristics

Figure 1. Output Characteristics

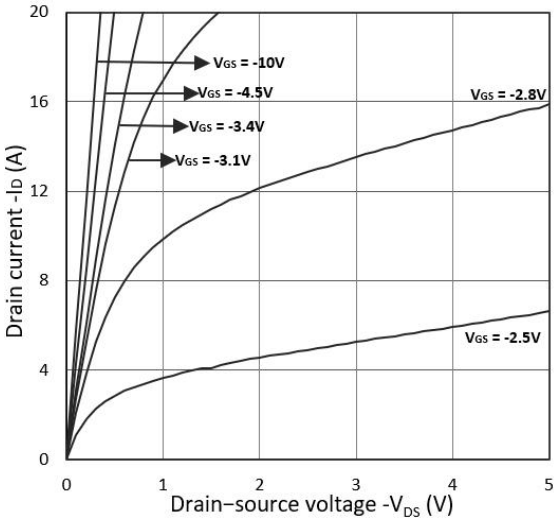


Figure 2. Transfer Characteristics

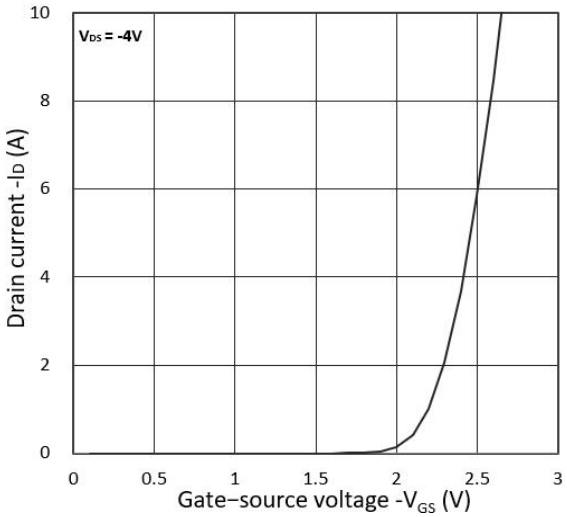


Figure 3. $R_{DS(ON)}$ vs. I_D

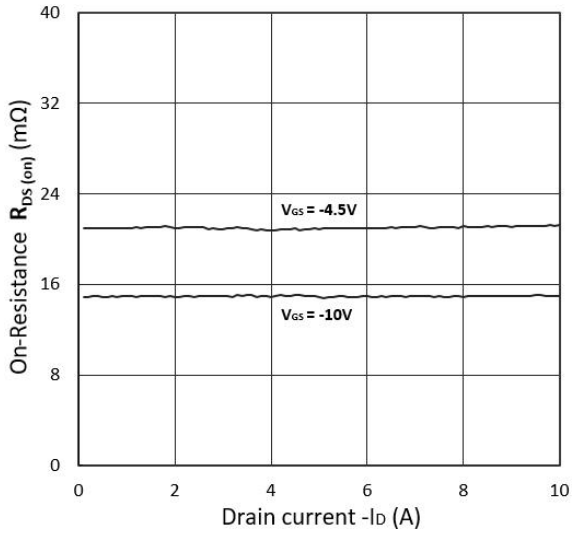


Figure 4. $R_{DS(ON)}$ vs. V_{GS}

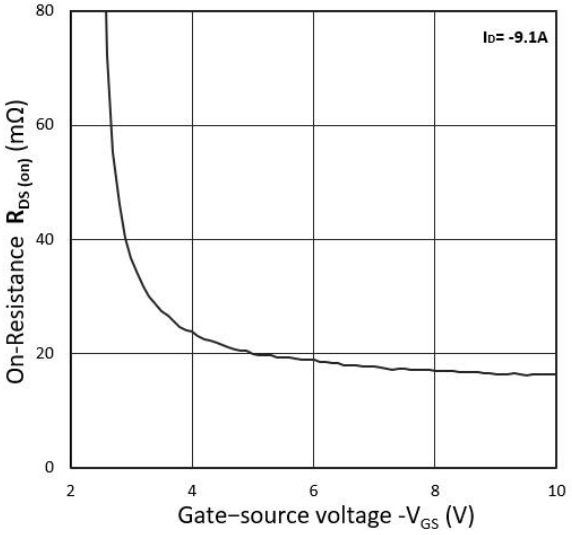


Figure 5. I_S vs. V_{SD}

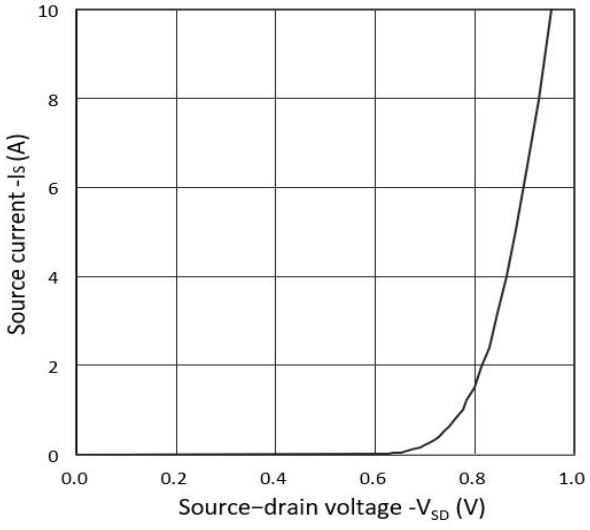
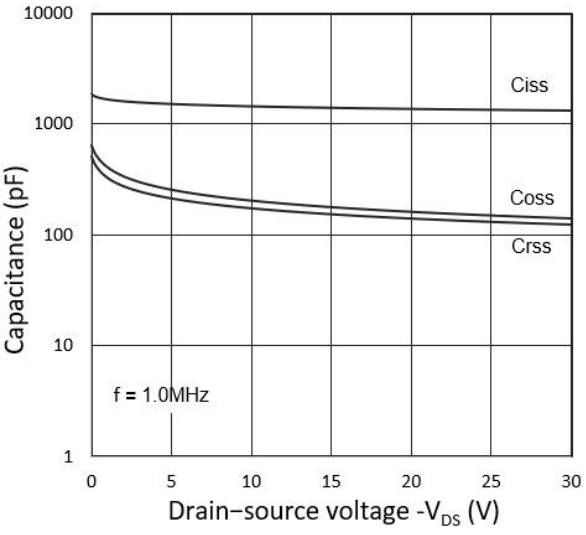
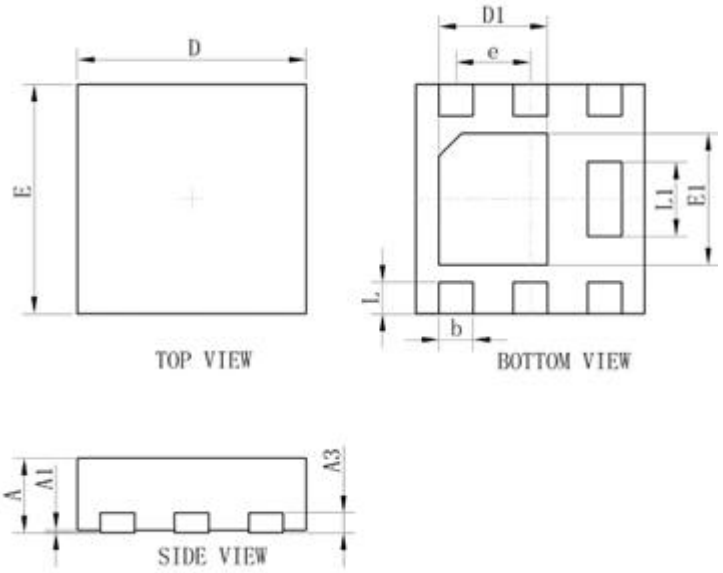


Figure 6. Capacitance Characteristics



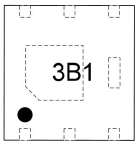
Outline Drawing – UDFN2020-6L

PACKAGE OUTLINE



SYMBOL	MILLIMETER		
	MIN	TYP	MAX
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
A3		0.152REF	
b	0.25	0.30	0.35
D	1.95	2.00	2.05
E	1.95	2.00	2.05
e		0.65BSC	
L	0.25	0.30	0.35
L1	0.46	0.56	0.66
D1	0.80	0.90	1.00
E1	0.80	0.90	1.00

Marking Codes

Part Number	EM03P115R
Marking Code	

Package Information

Qty： 3k/Reel

Revision History

No.	Version	Date	Revision Item	Request	Function and characteristic checking	Package dimension checking	Typos checking
1	1.0	2019-11-08	Released Version	Qi Shu Kun	Qi Shu Kun	Liu Jia Ying	Liu Jia Ying