Dual P-Channel 20V Enhancement Mode MOSFET

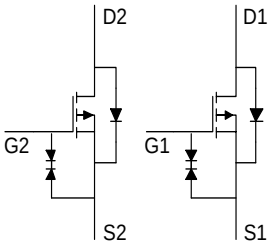
General Features

- Fast Switching Speed
- Low On-Resistance
- Small Footprint
- Typical ESD Protection:2500V
- RoHS Compliant
- Halogen-free Available

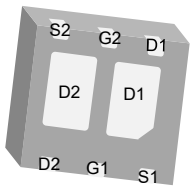
Product Summary		
BV_{DSS}	$R_{DS(ON)}$ (Max.)	I_D
-20V	35mΩ @VGS=-4.5V	-4.5A
	50mΩ @VGS=-2.5V	-4.5A
	100mΩ @VGS=-1.8V	-4.5A
	160mΩ @VGS=-1.5V	-1.5A

Applications

- Charger Switches and Load Switches for Portable Devices
- DC/DC Converters



DFN2×2



Ordering Information

Part Number	Package	Marking	Remark
AKF20P45D	DFN2*2	20P45	Halogen Free

Absolute Maximum Ratings		TA=25℃ unless otherwise specified	
Symbol	**Parameter**	**Rating**	**Unit**
V_{DSS}	Drain-to-Source Voltage[1]	-20	V
I_D	Continuous Drain Current	-4.5	A
I_{DM}	Pulsed Drain Current[2]	-15	
P_D	Power Dissipation	7.8	W
V_{GS}	Gate-to-Source Voltage	±8	V
T_L	Soldering Temperature	260	℃
T_J and T_{STG}	Operating and Storage Temperature Range	-55 to 150	

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

Thermal Characteristics			
Symbol	**Parameter**	**Rating**	**Unit**
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	16	℃/W

Electrical Characteristics **OFF Characteristics**						TA =25℃ unless otherwise specified
Symbol	**Parameter**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
BV_{DSS}	Drain-to-Source Breakdown Voltage	-20	--	--	V	V_{GS}=0V, I_D=-250μA
I_{DSS}	Drain-to-Source Leakage Current	--	--	-1	μA	V_{DS}=-20V，V_{GS}=0V
		--	--	-100	μA	V_{DS}=-20V，V_{GS}=0V T_J=125℃
I_{GSS}	Gate-to-Source Leakage Current	--	--	15	μA	V_{GS}=+8V, V_{DS}=0V
		--	--	-15		V_{GS}=-8V, V_{DS}=0V

Electrical Characteristics **ON Characteristics**						TA =25℃ unless otherwise specified
Symbol	**Parameter**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	29	35	mΩ	V_{GS}=-4.5V, I_D=-3.8A[3]
		--	35	50	mΩ	V_{GS}=-2.5V, I_D=-3.3A[3]
		--	42	100	mΩ	V_{GS}=-1.8V, I_D=-1A[3]
		--	55	160	mΩ	V_{GS}=-1.5V, I_D=-0.5A[3]
$V_{GS(th)}$	Gate-to-Source Threshold Voltage	-0.5	--	-1.0	V	V_{GD}=0V, I_D=-250μA
GFS	Forward Transconductance	--	23	--	S	V_{DS}=-10V, I_{DS}=-3.8A[3]

Dynamic Characteristics						Essentially independent of operating temperature
Symbol	**Parameter**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
Q_G	Total Gate Charge	--	10	--	nC	V_{GS}=-4.5V V_{DS}=-10V, I_D=-4.9A
Q_{GS}	Gate-to-Source Charge	--	1.5	--		
Q_{GD}	Gate-to-Drain (Miller) Charge	--	2.5	--		

Resistive Switching Characteristics						Essentially independent of operating temperature
Symbol	**Parameter**	**Min.**	**Typ.**	**Max.**	**Unit**	**Test Conditions**
$t_{d(ON)}$	Turn-on Delay Time	--	18	--	ns	V_{GS}=-4.5V V_{DD}=-10V, I_D=-3.9A R_G=1Ω
t_{rise}	Rise Time	--	20	--		
$t_{d(OFF)}$	Turn-off Delay Time	--	35	--		
t_{fall}	Fall Time	--	12	--		

Source-Drain Diode Characteristics						TA=25℃ unless otherwise specified
Symbol	**Parameter**	**Min**	**Typ.**	**Max.**	**Units**	**Test Conditions**
I_{SD}	Continuous Source Current		-4.5		A	Integral P-N Diode in MOSFET
I_{SM}	Maximum Pulsed Current		-15		A	
V_{SD}	Diode Forward Voltage	--	--	-1.2	V	I_{SD}=-3.9A[3], V_{GS}=0V

NOTE：

[1] TJ=+25℃ to +150℃

[2] Repetitive rating, pulse width limited by maximum junction temperature.

[3] Pulse width≤380μs; duty cycle≤2%.

Typical Characteristics

Figure 1. Typical Transfer Characteristics

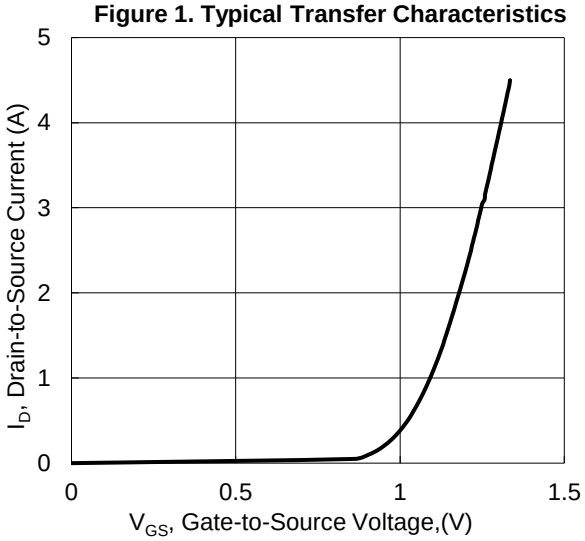


Figure 2. Typical Output Characteristics

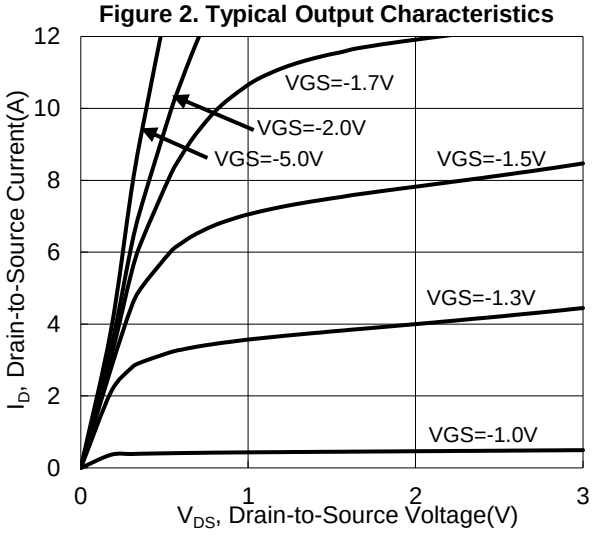


Figure 3. Maximum Power Dissipation vs. Case Temperature

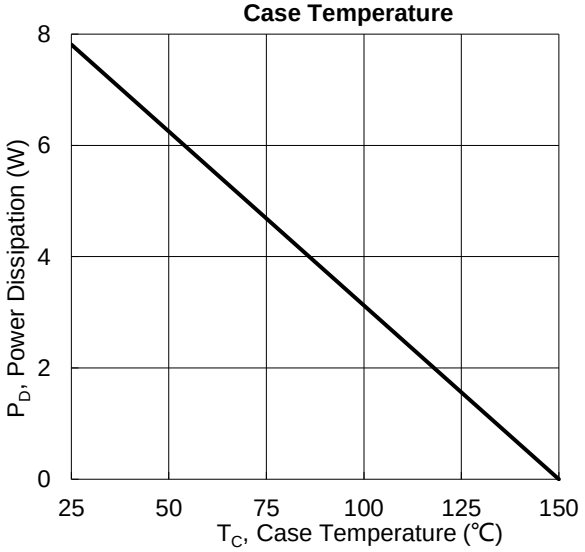


Figure 4. Maximum Continuous Drain Current vs Case Temperature

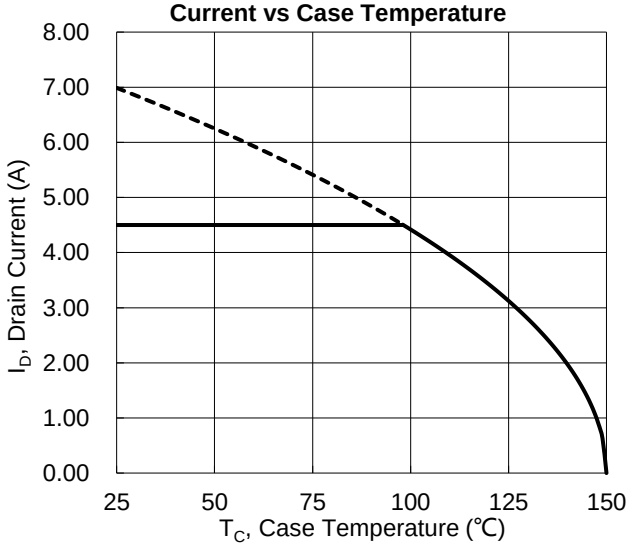


Figure 5. Maximum Effective Thermal Impedance, Junction-to-Ambient

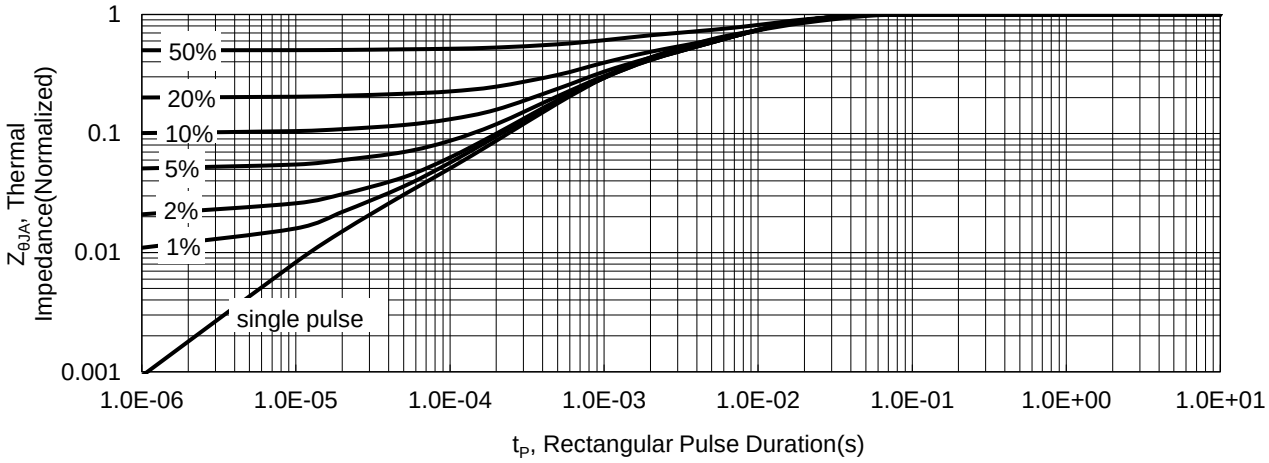
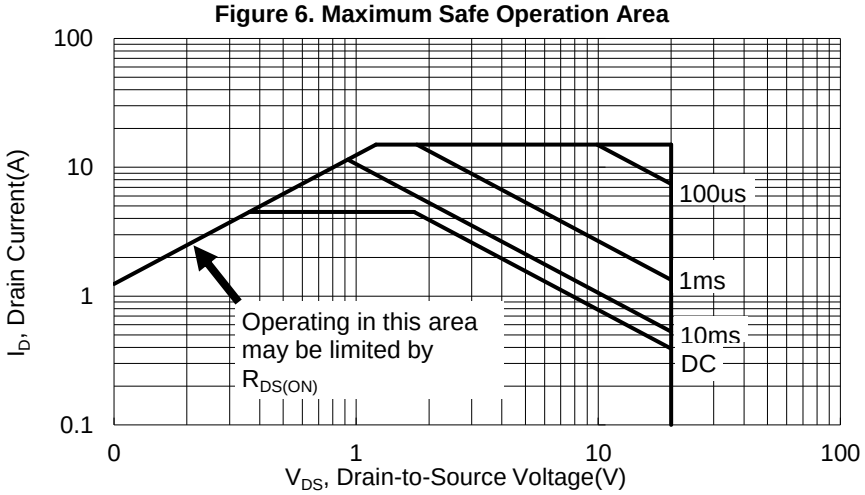
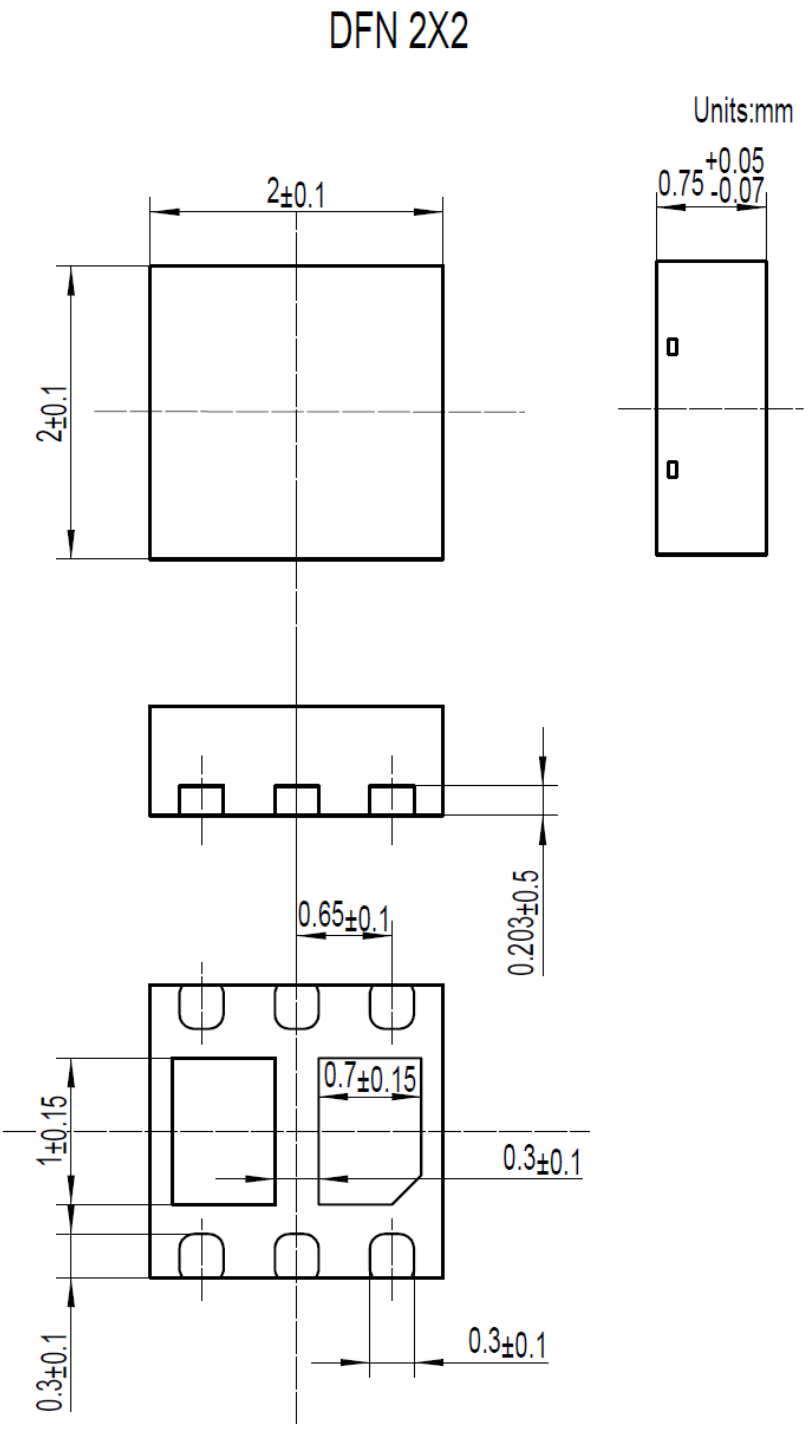


Figure 6. Maximum Safe Operation Area



Package Dimensions



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ADD: 4F, D26, UESTC National Science Park No. 1 Shuangxing Avenue, Gongxing Street,
Shuangliu District, Chengdu, China (Sichuan) Pilot Free Trade Zone.
Tel：+86-28-8523-2215 Email: sales@ark-micro.com http://www.ark-micro.com

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