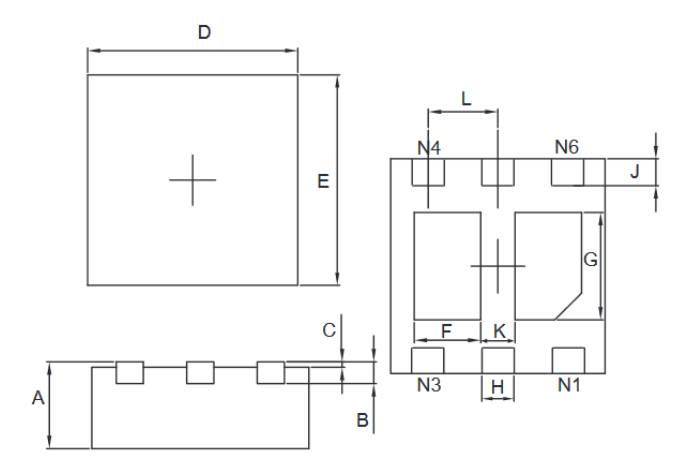


N-Channel Enhancement Mode MOSFET

Primary characteristics			
Symbol	Parameter	Value	Unit
I_D	Continuous drain current	10	A
V_{DSS}	Drain source voltage	30	V
$R_{DS(on)}$	Static drain-source on-resistance	18	mΩ MAX

Features

- **DFN2020-6L** case for easy automatic insertion
- Pb-free and **RoHS** compliant
- Super low gate charge
- Excellent c_{dv} / d_t effect decline
- Advanced high cell density trench technology
- Molding compound: UL Flammability Classification Rating 94V-0
- Terminals: matte tin-plated leads; solderability-per MIL-STD-202, method 208

Case dimensions											
											
DFN2020-6L											
	A	B	C	D	E	F	G	H	J	K	L
TYP	0.80	0.2	0.025	2.00	2.00	0.56	0.96	0.30	0.275	0.30	0.65
MIN	0.75		0.000	1.95	1.95	0.44	0.84	0.25	0.175	0.25	
MAX	0.85		0.050	2.05	2.05	0.69	1.09	0.35	0.375	0.35	
All measurements in mm											

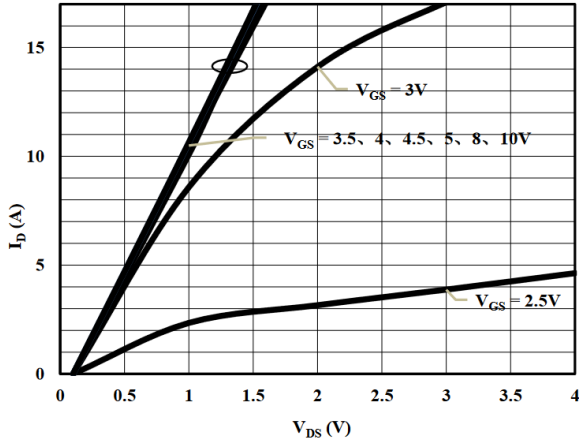
Maximum ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Value	Unit
Drain-source voltage	V_{DSS}	30	V
Gate-source voltage	V_{GSS}	± 20	V
Continuous drain current	I_D	10	A
Pulsed drain current ($T_{J(max)}=150^\circ\text{C}$)	I_{DM}	40	A
Thermal resistance junction-to-air	$R_{\theta JA}$	52	$^\circ\text{C}/\text{W}$
Power Dissipation ($T_C=25^\circ\text{C}$, $T_{J(max)}=150^\circ\text{C}$)	P_D	2.4	W
Operating junction temperature range	T_J, T_{STG}	-55 ~ 150	$^\circ\text{C}$

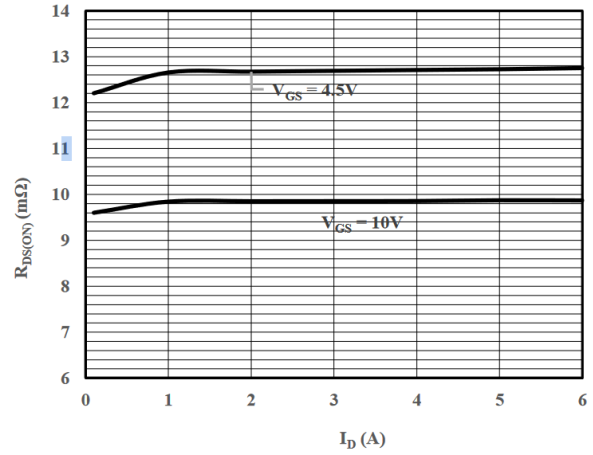
Electrical characteristics (T _A = 25°C)						
Characteristic	Test condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Drain-source breakdown voltage	V _{GS} =0V, I _D =250μA	V _{DSS}	30	-	-	V
Zero gate voltage drain current	V _{DS} =30V, V _{GS} =0V	I _{DSS}	-	-	1.0	μA
Gate body leakage current	V _{GS} =±20V, V _{DS} =0V	I _{GSS}	-	-	±100	nA
Gate threshold voltage	V _{DS} =V _{GS} , I _D =250μA	V _{GS(TH)}	1.0	-	2.0	V
Static drain-source on-state resistance ²⁾	V _{GS} =10V, I _D =8.0A	R _{DS(ON)}	-	-	12	mΩ
	V _{GS} =4.5V, I _D =6.0A		-	-	18	
Dynamic electrical characteristics						
Characteristic	Test condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Input capacitance	V _{DS} =15V V _{GS} =0V f=1.0MHz	C _{ISS}	-	952	-	pF
Output capacitance		C _{OSS}	-	110	-	
Reverse transfer capacitance		C _{RSS}	-	130	-	
Switching characteristics						
Characteristic	Test condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Turn ON delay time	V _{DD} =15V V _{GS} =10V I _D =30A R _G =1.6Ω	t _{d(ON)}	-	2.9	-	ns
Turn ON rise time		t _r	-	2.6	-	
Turn OFF delay time		t _{d(OFF)}	-	13	-	
Turn OFF fall time		t _f	-	2.4	-	
Total gate-charge	V _{DD} =15V V _{GS} =10V I _D =20A	Q _G	-	9.8	-	nC
Gate to source charge		Q _{GS}	-	4.2	-	
Gate to drain (Miller) charge		Q _{GD}	-	3.5	-	
Source-drain diode characteristics						
Characteristic	Test condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Diode forward voltage ²⁾	I _{SD} =20A, V _{GS} =0V, T _J =25°C	V _{SD}	-	-	1.2	V
Diode continuous forward current	T _A =25°C	I _S	-	-	10	A
Pulsed source-drain current ²⁾		I _{SM}	-	-	40	
Notes:						
1) The data tested when surface mounted on a 1 inch ² FR-4 board with 2oz copper						
2) The data tested by pulsed, pulse width ≤300μs, duty cycle ≤2%						
3) The power dissipation PD is based on T _{J(MAX)} =150°C, using junction-to-air thermal resistance						

Typical characteristics

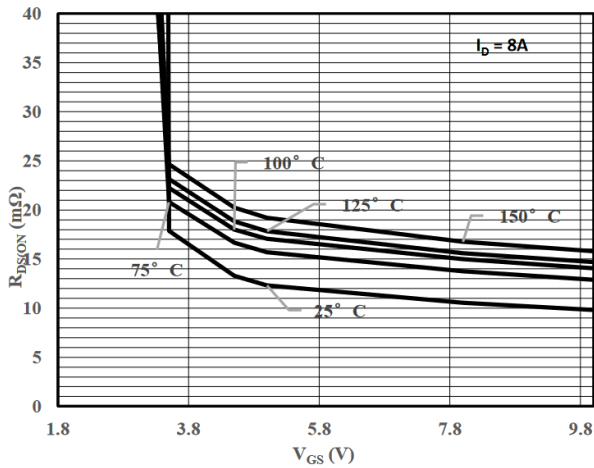
ON region characteristics



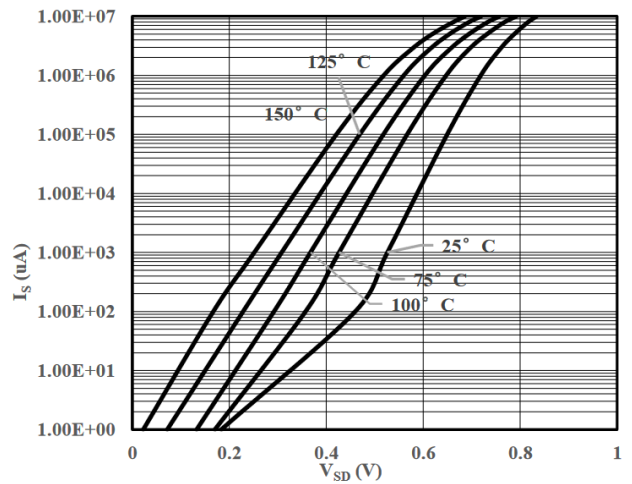
$R_{DS(ON)}$ vs. drain current



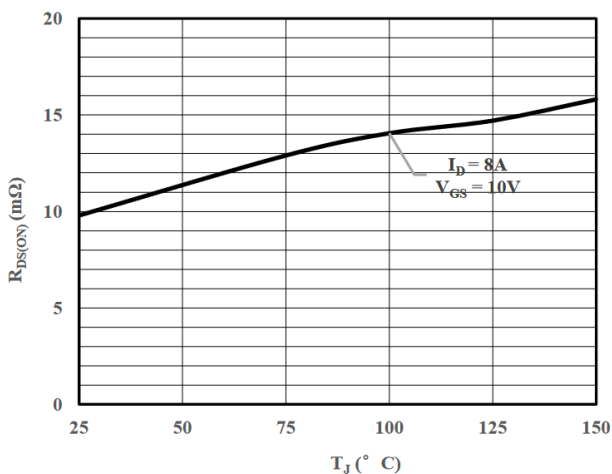
ON resistance vs. gate-source voltage



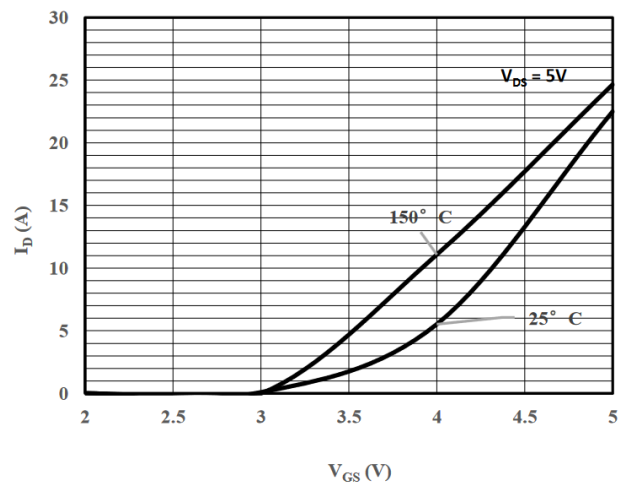
Body-diode characteristics



ON-resistance vs. junction temperature

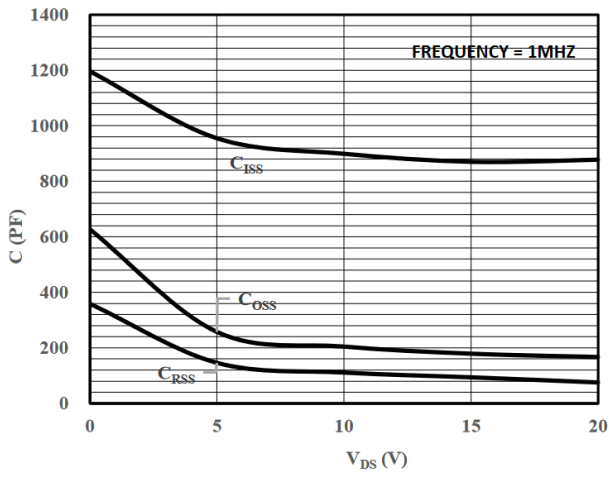


Transfer characteristics

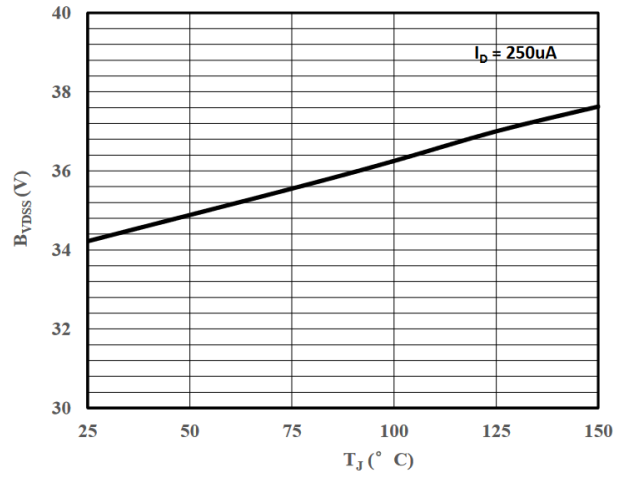


Typical characteristics

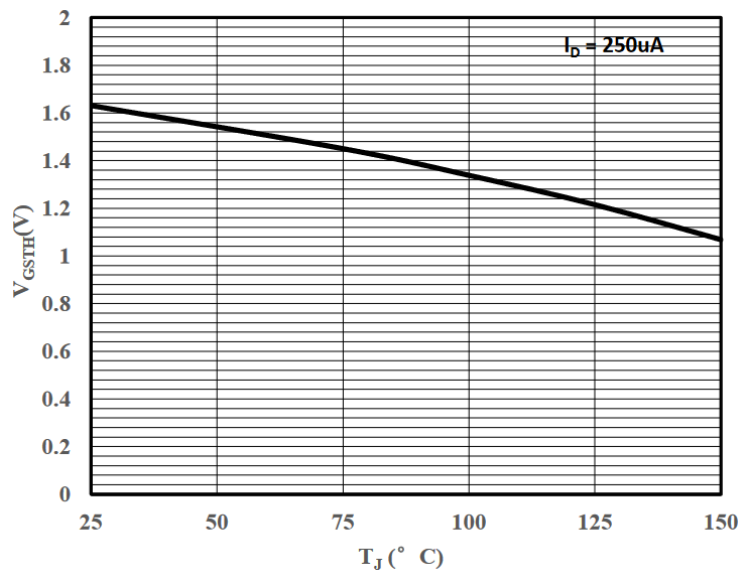
Capacitance characteristics

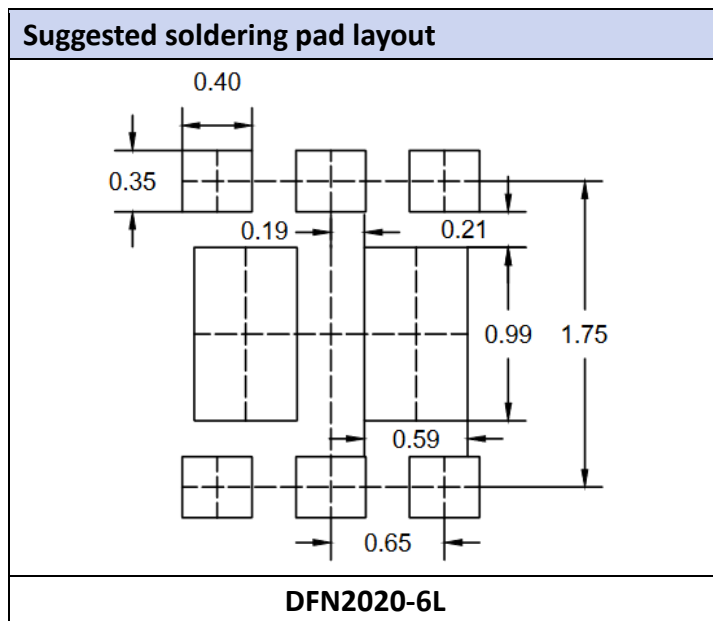


Drain-source vs. Junction temperature



Gate voltage vs. junction temperature





Ordering information				
Part Number	Marking	Package	Shipping Quantity	Dimensions
AKS120N03DF1	120N03	DFN2020-6L	3000 pcs / tape & reel	---

Disclaimer

Akyga semi reserves the right to make changes without notice to any product specification herein, to make corrections, modifications, enhancements or other changes. Akyga semi or anyone on its behalf assumes no responsibility or liability for any errors or inaccuracies. Data sheet specifications and its information contained are intended to provide a product description only. "Typical" parameters which may be included on Akyga semi data sheets and/ or specifications can and do vary in different applications and actual performance may vary over time. Akyga semi does not assume any liability arising out of the application or use of any product or circuit. Akyga semi products are not designed, intended or authorized for use in medical, life-saving implant or other applications intended for life-sustaining or other related applications where a failure or malfunction of component or circuitry may directly or indirectly cause injury or threaten a life without expressed written approval of Akyga semi. Customers using or selling Akyga semi components for use in such applications do so at their own risk and shall agree to fully indemnify Akyga semi and its subsidiaries harmless against all claims, damages and expenditures.