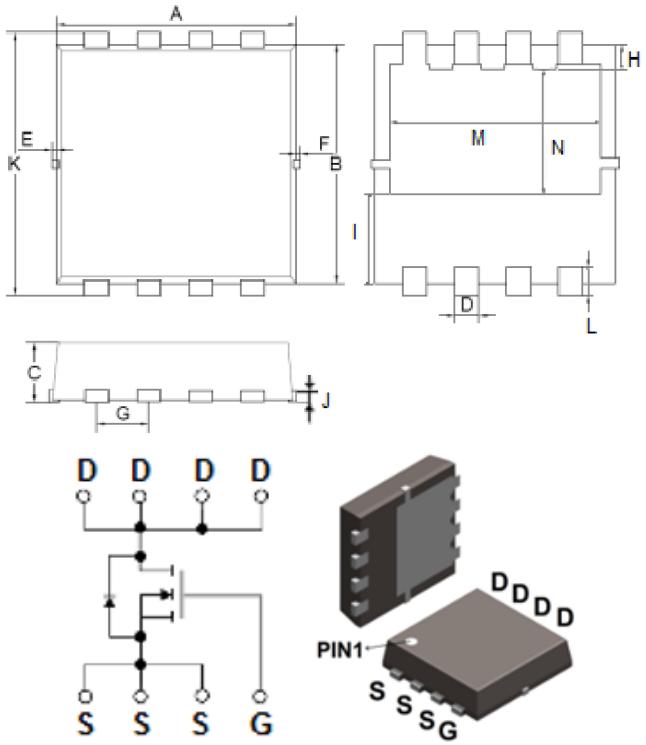
N-Channel Enhancement Mode MOSFET

Primary characteristics			
Symbol	**Parameter**	**Value**	**Unit**
I_D	Continuous drain current	64	A
V_{DSS}	Drain source voltage	80	V
R_{DSON}	Static drain-source on-resistance	15	mΩ MAX

Features

- **PDFN3x3-8L** case for easy automatic insertion
- Pb-free and **RoHS** compliant
- Advanced Shield Gate Trench (SGT) technology
- Superior thermal resistance
- Logic level gate drive
- HBM: JESD22-A114-B: 1B
- Molding compound: UL Flammability Classification Rating 94V-0
- Terminals: matte tin-plated leads; solderability-per MIL-STD-202, Method 208

Case dimensions



G – Gate; S – Source; D - Drain

PDFN3x3-8L

Unit		A	B	C	D	E	F	G	H	I	J	K	L	M	N
mm	MIN	2.9	2.9	0.65	0.2	0	0	0.55	0.2	0.7	0.1	3.15	0.2	2.35	1.5
	MAX	3.1	3.1	0.85	0.4	0.1	0.1	0.75	0.4	1.1	0.2	3.45	0.4	2.55	1.9

Maximum ratings (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Value	Unit
Drain-source voltage	V_{DSS}	80	V
Gate-source voltage	V_{GSS}	±20	V
Continuous drain current (T_C=25°C)	I_D	64	A
Continuous drain current (T_C=100°C)		41	
Continuous drain current (T_A=25°C)		12	
Continuous drain current (T_A=100°C)		8	
Pulsed drain current (t_p=10µs)	I_{DM}	256	A
Single pulse avalanche energy (MAX, V_{DD}=40V, V_{GS}=10V, L=0.5mH)	E_{AS}	75	mJ
Power Dissipation	P_D	57	W
Operating junction temperature range	T_J, T_{STG}	-55 ~ 150	°C

Thermal characteristics

Characteristic	Test condition	Symbol	Value Min.	Value Typ.	Value Max.	Unit
Thermal resistance junction-case	-	$R_{\theta JC}$	-	2.0	2.2	°C/W
Thermal resistance junction-ambient [1]		$R_{\theta JA}$	-	45	55	°C/W

Electrical characteristics (T_A = 25°C)

Characteristic	Test condition	Symbol	Value Min.	Value Typ.	Value Max.	Unit
Drain-source breakdown voltage	V_{GS}=0V, I_D=250μA	V_{DSS}	80	-	-	V
Zero gate voltage drain current	V_{DS}=80V, 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	1.9	2.5	V
Drain-source on-state resistance [2]	V_{GS}=10V, I_D=15A	$R_{DS(ON)}$	-	6.8	7.5	mΩ
	V_{GS}=6.0V, I_D=10A		-	8.0	10	
	V_{GS}=4.5V, I_D=5.0A		-	10	15	
Gate resistance	V_{GS}=0V, f=1.0MHz	R_G	-	1.8	-	Ω

Dynamic electrical characteristics

Characteristic	Test condition	Symbol	Value Min.	Value Typ.	Value Max.	Unit
Input capacitance	V_{DS}=40V V_{GS}=0V f=1.0MHz	C_{ISS}	-	1551	-	pF
Output capacitance		C_{OSS}	-	294	-	
Reverse transfer capacitance		C_{RSS}	-	7.0	-	

Switching characteristics

Characteristic	Test condition	Symbol	Value Min.	Value Typ.	Value Max.	Unit
Turn ON delay time	V_{DS}=40V V_{GS}=15V I_D=20A R_G=3.3Ω	$t_{d(ON)}$	-	7.5	-	ns
Turn ON rise time		t_r	-	39	-	
Turn OFF delay time		$t_{d(OFF)}$	-	38	-	
Turn OFF fall time		t_f	-	50	-	
Total gate-charge	V_{DD}=40V V_{GS}=10V I_D=10A	Q_G	-	35	-	nC
Gate to source charge		Q_{GS}	-	4.4	-	
Gate to drain (Miller) charge		Q_{GD}	-	10.6	-	

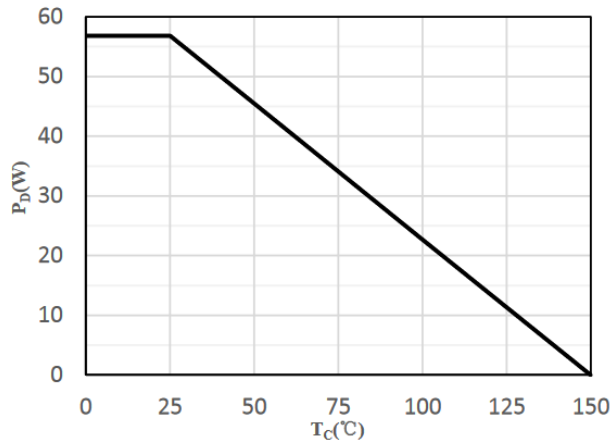
Source-drain diode characteristics

Characteristic	Test condition	Symbol	Value Min.	Value Typ.	Value Max.	Unit
Diode forward voltage [2]	I_{SD}=10A, V_{GS}=0V	V_{SD}	-	0.8	1.2	V
Reverse recovery time	I_{SD}=10A, V_{GS}=0V d_I/d_t=100A/μs	trr	-	40	-	Ns
Reverse recovery charge		Qrr	-	42	-	nC

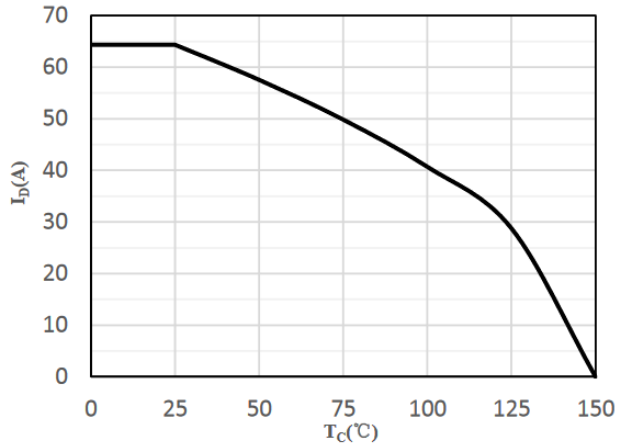
Notes:
1) The data tested by surface mounted on a 1.0 inch^2 FR-4 board with 2oz copper
2) The data tested by pulsed, pulse width ≤300μs, duty cycle ≤2%

Typical characteristics

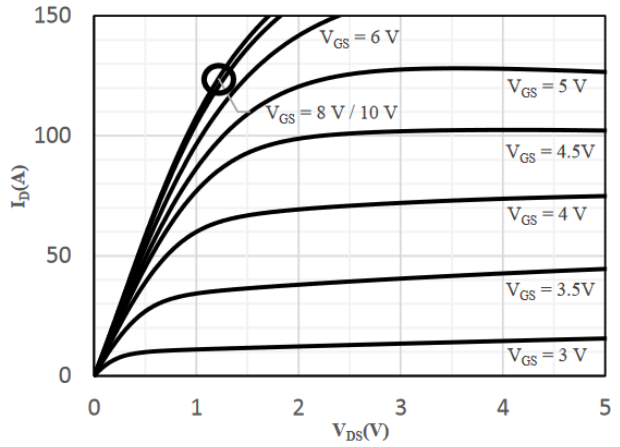
Power dissipation



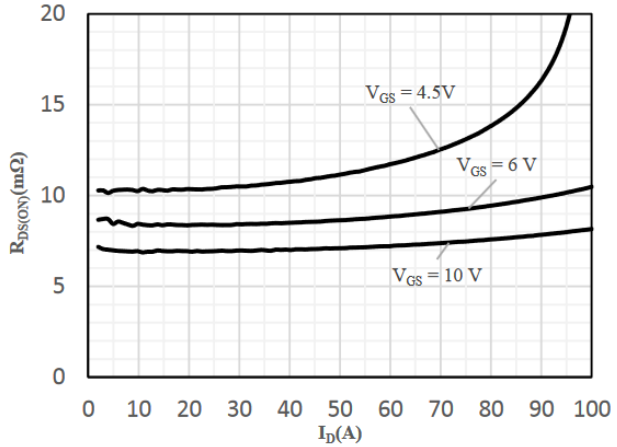
Drain current



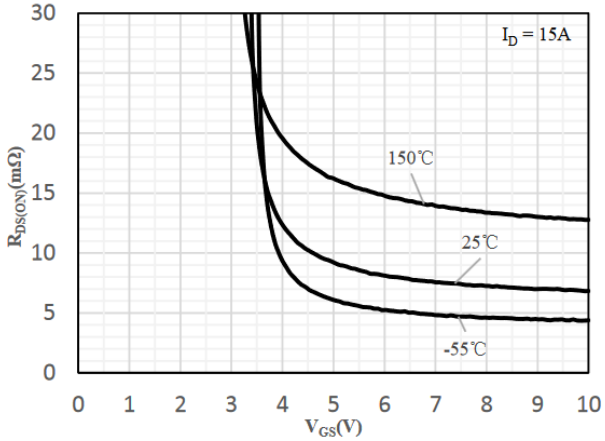
Typical output characteristics



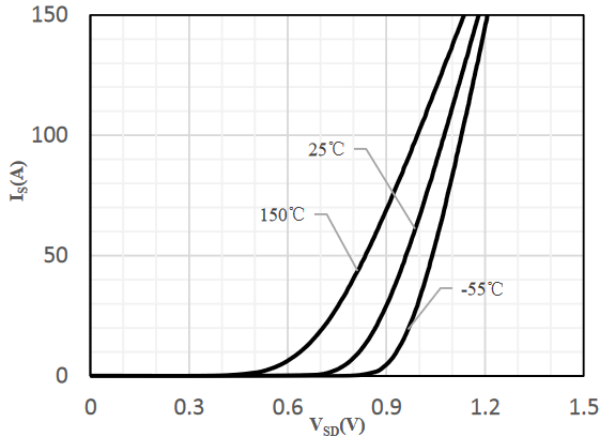
ON-resistance vs. drain current and gate voltage



ON-resistance vs. gate-source voltage

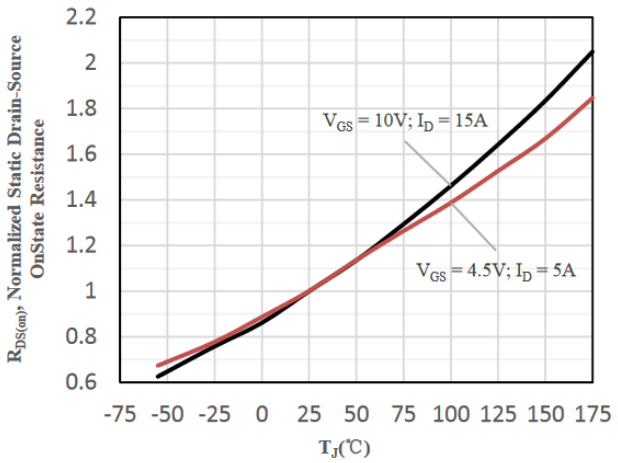


Body-diode characteristics

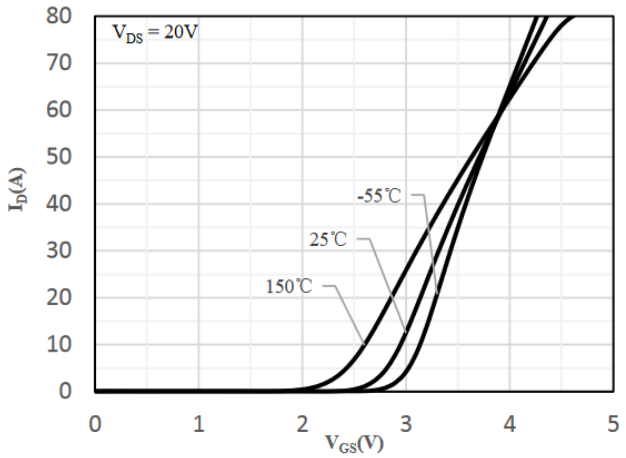


Typical characteristics

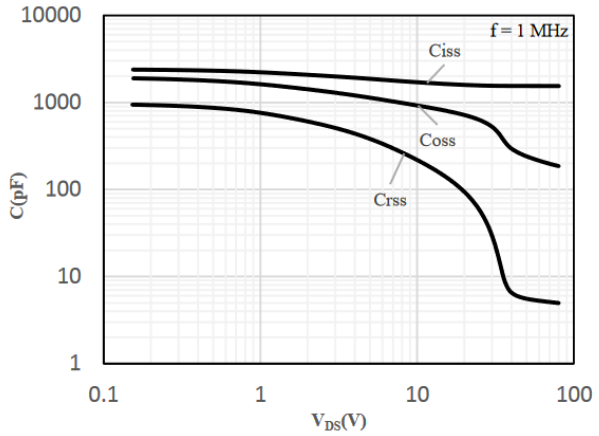
Normalized ON-resistance vs. junction temperature



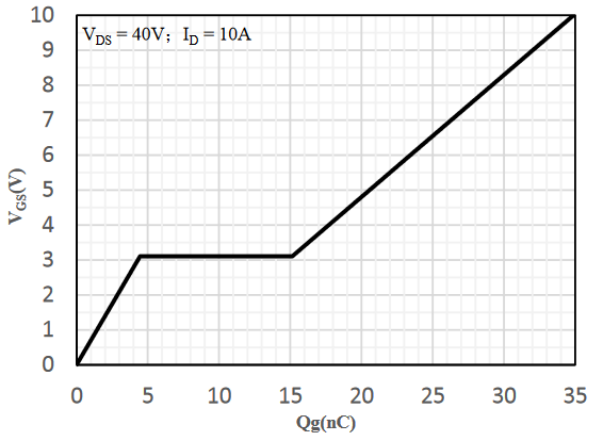
Transfer characteristics



Capacitance characteristics

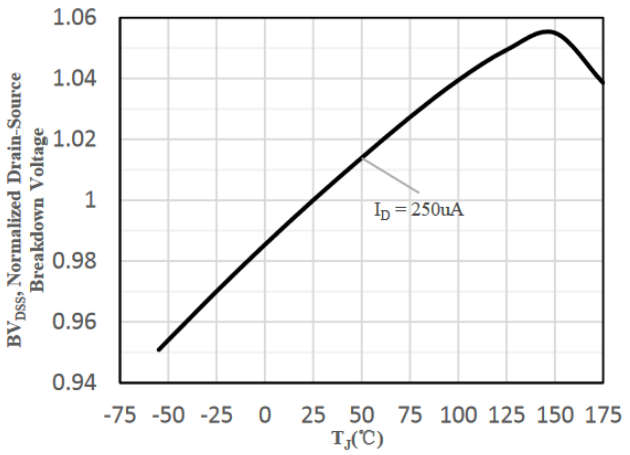


Gate-charge characteristics

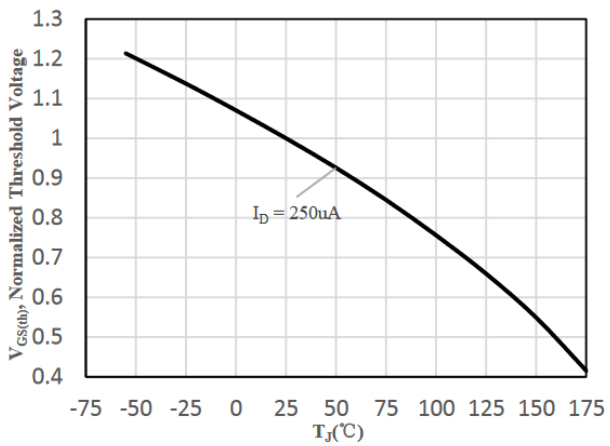


Typical characteristics

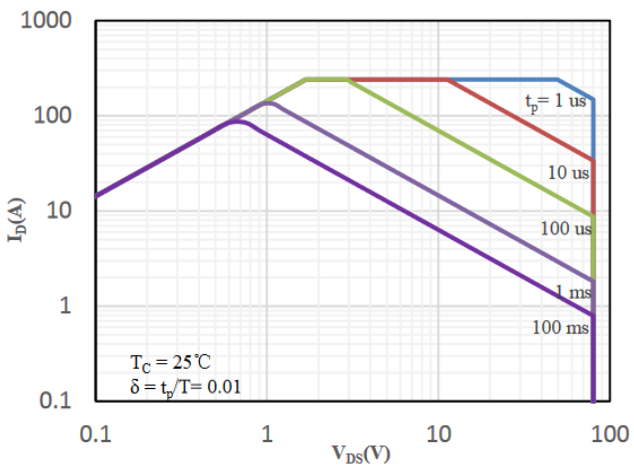
Normalized breakdown voltage



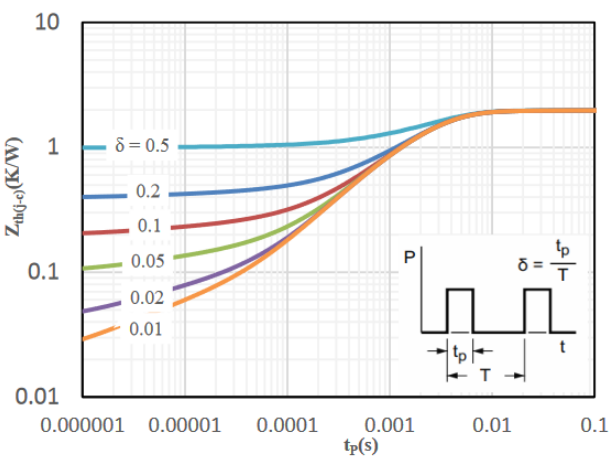
Normalized $V_{GS(th)}$ vs. junction temperature

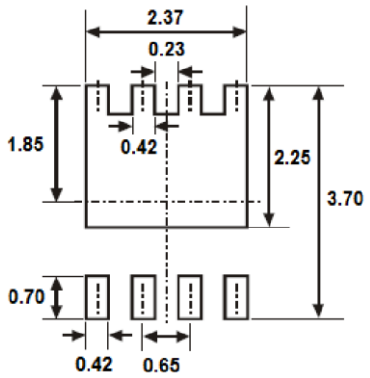


Safe operation area



Maximum transient thermal impedance



Suggested soldering pad layout

PDFN3×3-8L

Ordering information				
Part Number	**Marking**	**Package**	**Shipping Quantity**	**Dimensions**
AKS075N08T-3D8	075N08T	PDFN3×3-8L	**5000 pcs / reel**	---

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