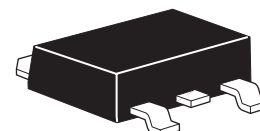


ZXMP4A16K

40V P-channel enhancement mode MOSFET

Summary

$V_{(BR)DSS} = -40V$; $R_{DS(ON)} = 0.060\Omega$ $I_D = -9.9A$

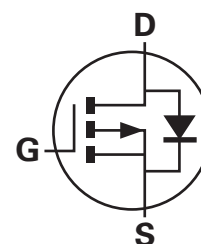


Description

This new generation of trench MOSFETs from Zetex utilizes a unique structure that combines the benefits of low on-resistance with fast switching speed. This makes them ideal for high efficiency, low voltage, power management applications.

Features

- Low on-resistance
- Fast switching speed
- Low threshold
- Low gate drive
- DPAK package



Applications

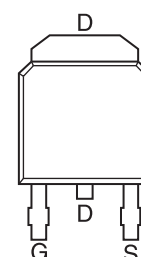
- DC - DC converters
- Audio output stages
- Relay and solenoid driving
- Motor control

Ordering information

Device	Reel size (inches)	Tape width	Quantity per reel
ZXMP4A16KTC	13	16mm	2500 units

Device marking

ZXMP
4A16



Pinout - Top view

ZXMP4A16K

Absolute maximum rating

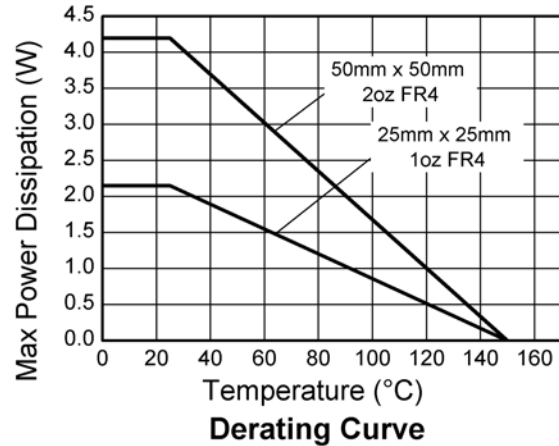
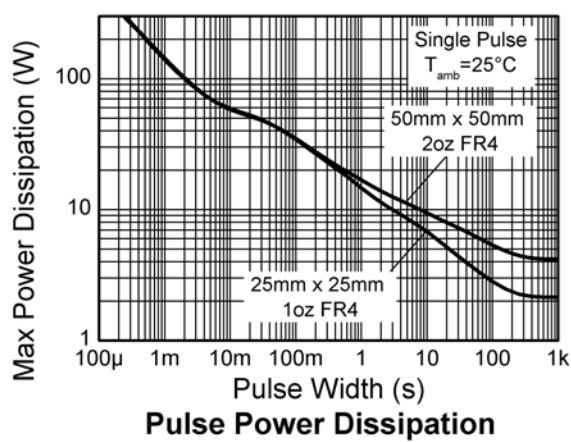
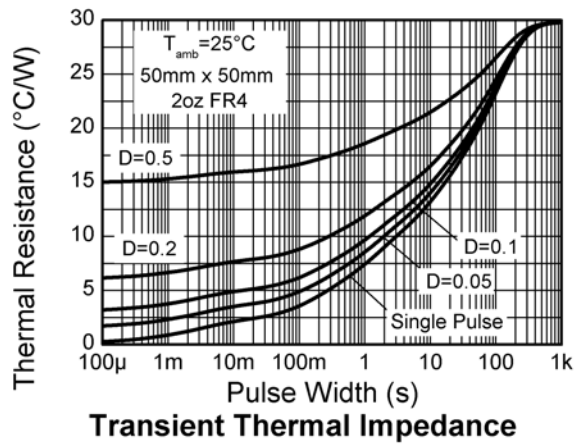
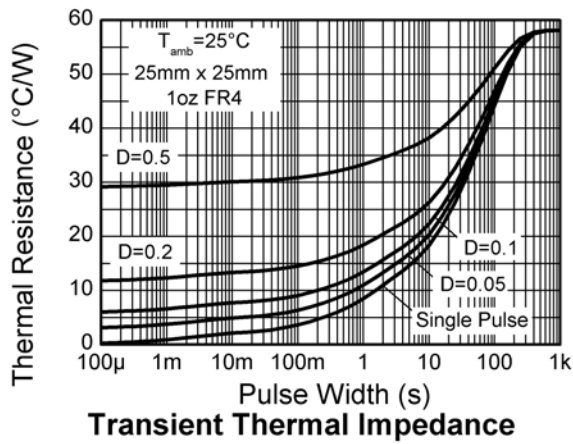
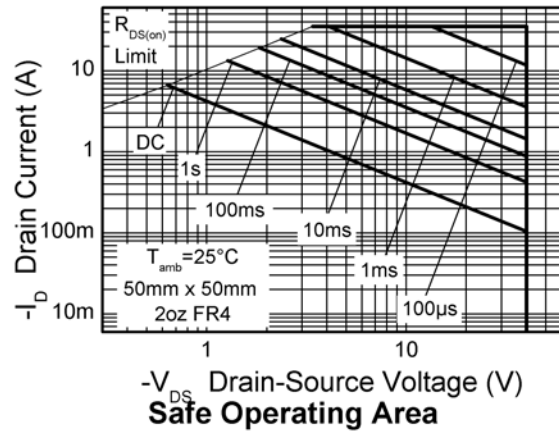
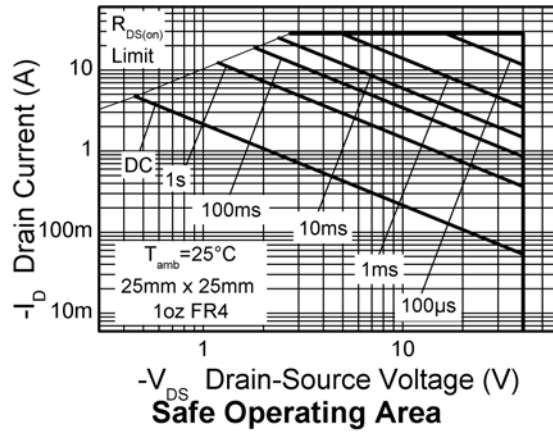
Parameter	Symbol	Limit	Unit
Drain-source voltage	V_{DSS}	-40	V
Gate-source voltage	V_{GS}	± 20	V
Continuous drain current $V_{GS} = -10V$; $T_A = 25^\circ C$ ^(b) $V_{GS} = -10V$; $T_A = 70^\circ C$ ^(b) $V_{GS} = -10V$; $T_A = 25^\circ C$ ^(a)	I_D	-9.9 -8.0 -6.6	A A A
Pulsed drain current ^(c)	I_{DM}	-35	A
Continuous source current (body diode) ^(b)	I_S	-10.1	A
Pulsed source current (body diode) ^(c)	I_{SM}	-35	A
Power dissipation at $T_A = 25^\circ C$ ^(a) Linear derating factor	P_D	4.2 33.6	W mW/°C
Power dissipation at $T_A = 25^\circ C$ ^(b) Linear derating factor	P_D	9.5 76	W mW/°C
Power dissipation at $T_A = 25^\circ C$ ^(d) Linear derating factor	P_D	2.15 17.2	W mW/°C
Operating and storage temperature range	T_j ; T_{stg}	-55 to +150	°C
Thermal resistance			
Parameter	Symbol	Value	Unit
Junction to ambient ^(a)	$R_{\theta JA}$	30	°C/W
Junction to ambient ^(b)	$R_{\theta JA}$	13.2	°C/W
Junction to ambient ^(d)	$R_{\theta JA}$	58	°C/W

NOTES:

- (a) For a device surface mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions.
- (b) For a device surface mounted on FR4 PCB measured at $t \leq 10$ sec.
- (c) Repetitive rating 50mm x 50mm x 1.6mm FR4 PCB, $D=0.02$ pulse width=300 μs - pulse width limited by maximum junction temperature.
- (d) For a device surface mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

ZXMP4A16K

Characteristics



ZXMP4A16K

Electrical characteristics (at $T_A = 25^\circ\text{C}$ unless otherwise stated)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Static						
Drain-source breakdown voltage	V _{(BR)DSS}	-40			V	I _D =-250μA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}			-1	μA	V _{DS} =-40V, V _{GS} =0V
Gate-body leakage	I _{GSS}			100	nA	V _{GS} =±20V, V _{DS} =0V
Gate-source threshold voltage	V _{GS(th)}	-1.0			V	I _D =-250μA, V _{DS} =V _{GS}
Static drain-source on-state resistance ^(*)	R _{DS(on)}			0.060	Ω	V _{GS} =-10V, I _D =-3.8A
				0.100	Ω	V _{GS} =-4.5V, I _D =-2.9A
Forward transconductance ^{(*)(‡)}	g _{fs}		7.4		S	V _{DS} =-15V,I _D =-3.8A
Dynamic ^(‡)						
Input capacitance	C _{iss}		965		pF	V _{DS} =-20V, V _{GS} =0V, f=1MHz
Output capacitance	C _{oss}		180		pF	
Reverse transfer capacitance	C _{rss}		158		pF	
Switching ^{(†) (‡)}						
Turn-on delay time	t _{d(on)}		4.0		ns	V _{DD} =-20V, I _D =-1A R _G =6.0Ω,V _{GS} =-10V
Rise time	t _r		6.0		ns	
Turn-off delay time	t _{d(off)}		36.8		ns	
Fall time	t _f		17.1		ns	
Gate charge	Q _g		16.5		nC	V _{DS} =-20V,V _{GS} =-5V, I _D =-3.8A
Total gate charge	Q _g		29.6		nC	V _{DS} =-20V,V _{GS} =-10V, I _D =-3.8A
Gate-source charge	Q _{gs}		2.8		nC	
Gate-drain charge	Q _{gd}		8.1		nC	
Source-drain diode						
Diode forward voltage ^(*)	V _{SD}		-0.89	-1.2	V	T _J =25°C, I _S =-3.8A, V _{GS} =0V
Reverse recovery time ^(‡)	t _{rr}		29.8		ns	T _J =25°C, I _F =-3.8A, di/dt= 100A/μs
Reverse recovery charge ^(‡)	Q _{rr}		37.2		nC	

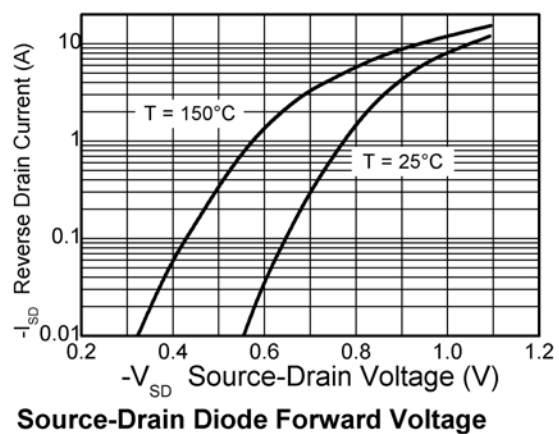
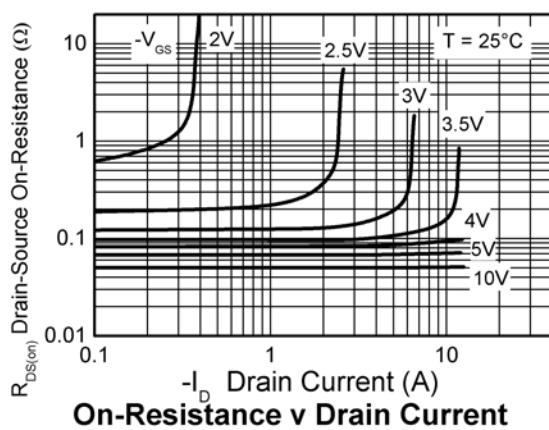
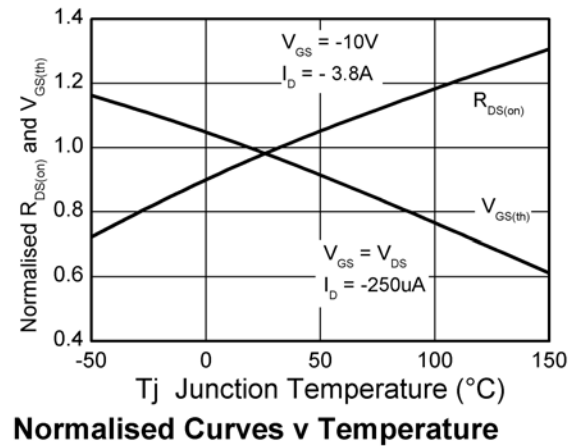
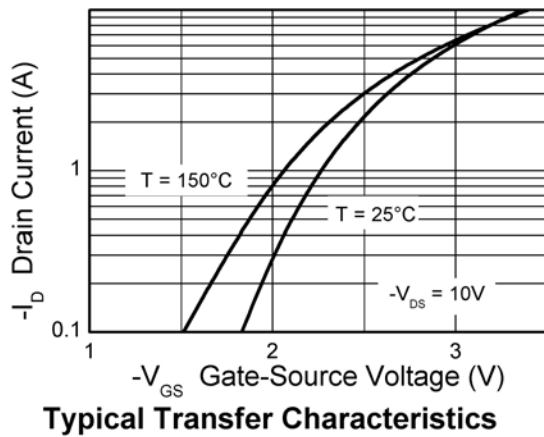
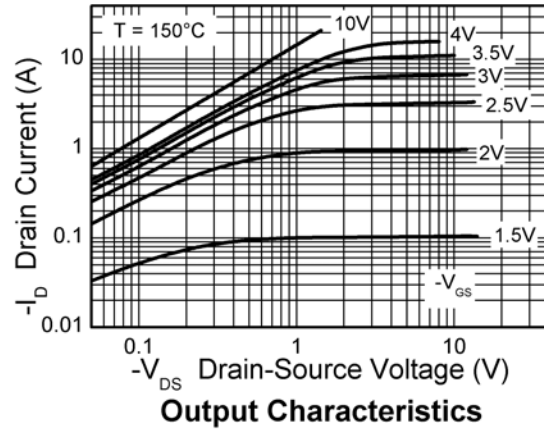
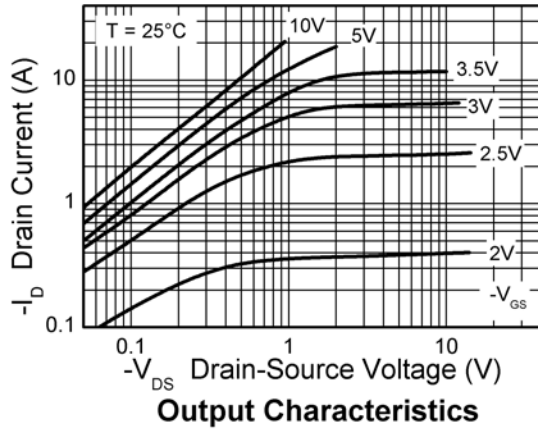
NOTES:

(*) Measured under pulsed conditions. Width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

(†) Switching characteristics are independent of operating junction temperature.

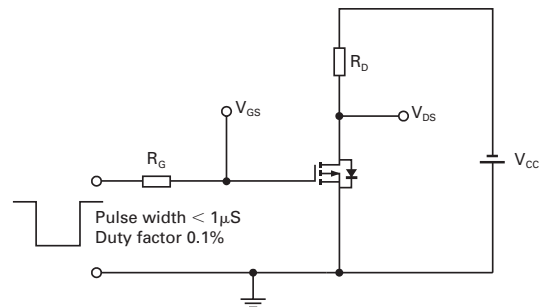
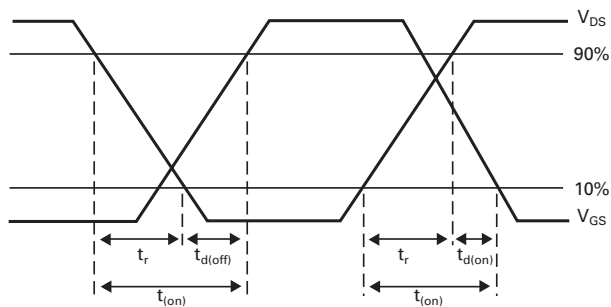
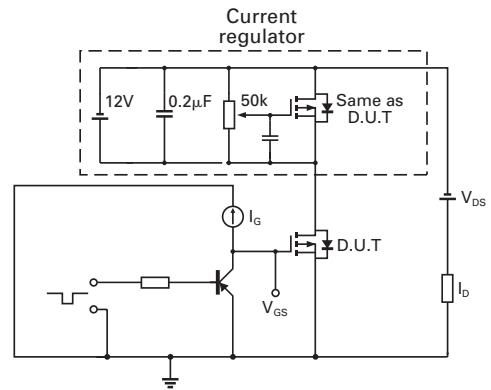
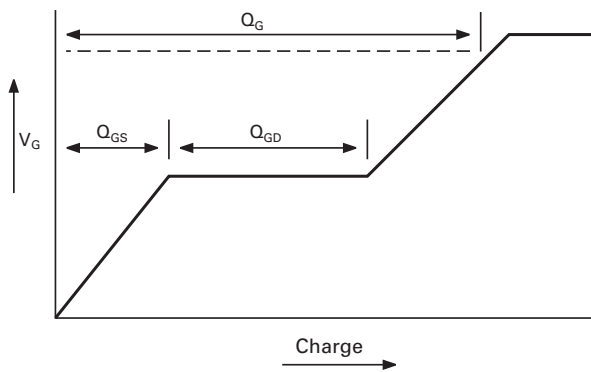
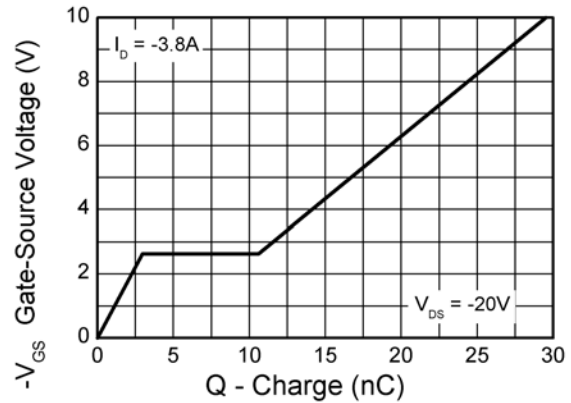
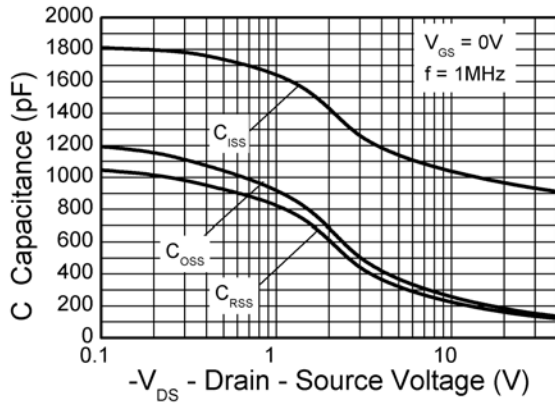
(‡) For design aid only, not subject to production testing.

Typical characteristics



ZXMP4A16K

Typical characteristics

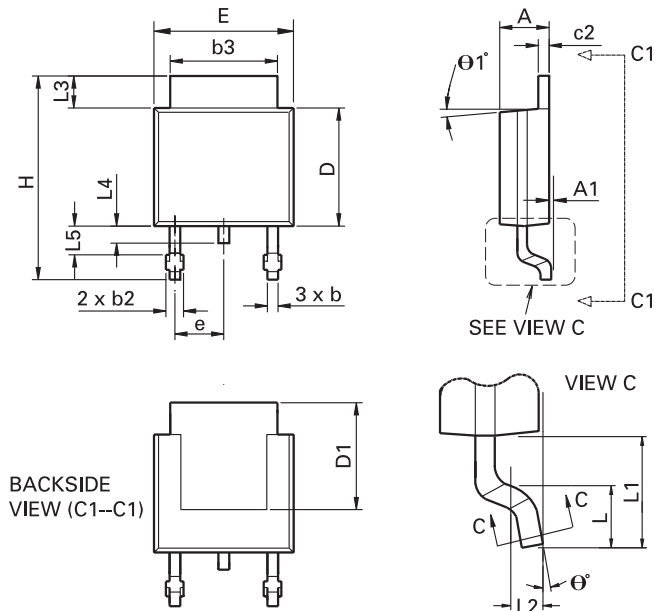


ZXMP4A16K

Intentionally left blank

ZXMP4A16K

Package details - DPAK



Package dimensions

Dim.	Inches		Millimeters		Dim.	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.086	0.094	2.18	2.39	e	0.090 BSC		2.29 BSC	
A1	-	0.005	-	0.127	H	0.370	0.410	9.40	10.41
b	0.020	0.035	0.508	0.89	L	0.055	0.070	1.40	1.78
b2	0.030	0.045	0.762	1.14	L1	0.108 REF		2.74 REF	
b3	0.205	0.215	5.21	5.46	L2	0.020 BSC		0.508 BSC	
c	0.018	0.024	0.457	0.61	L3	0.035	0.065	0.89	1.65
c2	0.018	0.023	0.457	0.584	L4	0.025	0.040	0.635	1.016
D	0.213	0.245	5.41	6.22	L5	0.045	0.060	1.14	1.52
D1	0.205	-	5.21	-	Θ1°	0°	10°	0°	10°
E	0.250	0.265	6.35	6.73	Θ°	0°	15°	0°	15°
E1	0.170	-	4.32	-	-	-	-	-	-

Note: Controlling dimensions are in inches. Approximate dimensions are provided in millimeters

Europe	Americas	Asia Pacific	Corporate Headquarters
Zetex GmbH Streitfeldstraße 19 D-81673 München Germany	Zetex Inc 700 Veterans Memorial Highway Hauppauge, NY 11788 USA	Zetex (Asia Ltd) 3701-04 Metroplaza Tower 1 Hing Fong Road, Kwai Fong Hong Kong	Zetex Semiconductors plc Zetex Technology Park, Chadderton Oldham, OL9 9LL United Kingdom
Telefon: (49) 89 45 49 49 0 Fax: (49) 89 45 49 49 49 europe.sales@zetex.com	Telephone: (1) 631 360 2222 Fax: (1) 631 360 8222 usa.sales@zetex.com	Telephone: (852) 26100 611 Fax: (852) 24250 494 asia.sales@zetex.com	Telephone: (44) 161 622 4444 Fax: (44) 161 622 4446 hq@zetex.com

For international sales offices visit www.zetex.com/offices

Zetex products are distributed worldwide. For details, see www.zetex.com/salesnetwork

This publication is issued to provide outline information only which (unless agreed by the company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contact or be regarded as a representation relating to the products or services concerned. The company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

Телефон: 8 (812) 309 58 32 (многоканальный)

Факс: 8 (812) 320-02-42

Электронная почта: org@eplast1.ru

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.