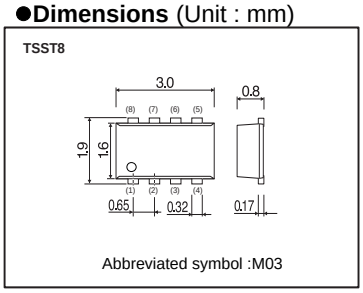
1.5V Drive Nch + Pch MOSFET

TT8M3

●Structure
Silicon N-channel MOSFET/
Silicon P-channel MOSFET

●Features
1) Low On-state resistance.
2) Low voltage drive(1.5V).
3) High power package.

●Dimensions (Unit : mm)

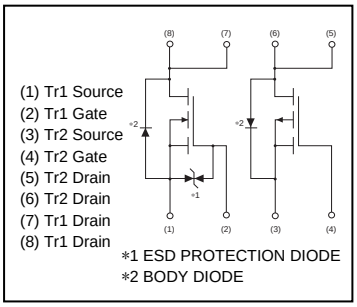


●Application
Switching

●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
TT8M3		○

●Inner circuit



●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits		Unit
			Tr1 : N-ch	Tr2 : P-ch	
Drain-source voltage		V_{DSS}	20	−20	V
Gate-source voltage		V_{GSS}	±10	±10	V
Drain current	Continuous	I_D	±2.5	±2.4	A
	Pulsed	I_{DP} *1	±10	±9.6	A
Source current (Body Diode)	Continuous	I_S	0.8	−0.8	A
	Pulsed	I_{SP} *1	10	−9.6	A
Power dissipation		P_D *2	1.25		W / TOTAL
			1.0		W / ELEMENT
Channel temperature		Tch	150		°C
Range of storage temperature		Tstg	−55 to +150		°C

*1 Pw≤10μs, Duty cycle≤1%

*2 Mounted on a ceramic board.

●**Electrical characteristics** (Ta = 25°C)

<Tr1(Nch)>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	-	-	±10	μA	V_{GS}=±10V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	20	-	-	V	I_D=1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	-	-	1	μA	V_{DS}=20V, V_{GS}=0V
Gate threshold voltage	$V_{GS\ (th)}$	0.3	-	1.0	V	V_{DS}=10V, I_D=1mA
Static drain-source on-state resistance	$R_{DS\ (on)}$*	-	52	72	mΩ	I_D=2.5A, V_{GS}=4.5V
		-	65	90		I_D=2.5A, V_{GS}=2.5V
		-	85	120		I_D=1.2A, V_{GS}=1.8V
		-	100	140		I_D=0.5A, V_{GS}=1.5V
Forward transfer admittance	$\|Y_{fs}\|$*	2.7	-	-	S	V_{DS}=10V, I_D=2.5A
Input capacitance	C_{iss}	-	260	-	pF	V_{DS}=10V
Output capacitance	C_{oss}	-	65	-	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	-	35	-	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$*	-	9	-	ns	I_D=1.2A, V_{DD}≒10V
Rise time	t_r *	-	17	-	ns	V_{GS}=4.5V
Turn-off delay time	$t_{d(off)}$*	-	28	-	ns	R_L=8.3Ω
Fall time	t_f *	-	17	-	ns	R_G=10Ω
Total gate charge	Q_g *	-	3.6	-	nC	I_D=2.5A, V_{DD}≒10V
Gate-source charge	Q_{gs} *	-	0.7	-	nC	V_{GS}=4.5V,R_L=4Ω
Gate-drain charge	Q_{gd} *	-	0.6	-	nC	R_G=10Ω

*Pulsed

●**Body diode characteristics** (Source-Drain) (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	V_{SD}*	-	-	1.2	V	I_s=2.5A, V_{GS}=0V

*Pulsed

● **Electrical characteristics** (Ta = 25°C)

<Tr2(Pch)>

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	-	-	±100	μA	V_{GS}=±10V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	−20	-	-	V	I_D=−1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}		-	−1	μA	V_{DS}=−20V, V_{GS}=0V
Gate threshold voltage	$V_{GS\ (th)}$	−0.3	-	−1.0	V	V_{DS}=−10V, I_D=−1mA
Static drain-source on-state resistance	$R_{DS\ (on)}$*	-	80	105	mΩ	I_D=−2.4A, V_{GS}=−4.5V
		-	105	140		I_D=−1.2A, V_{GS}=−2.5V
		-	150	225		I_D=−1.2A, V_{GS}=−1.8V
		-	180	360		I_D=−0.5A, V_{GS}=−1.5V
Forward transfer admittance	$\|Y_{fs}\|$*	2.4	-	-	S	I_D=−2.4A, V_{DS}=−10V
Input capacitance	C_{iss}	-	850	-	pF	V_{DS}=−10V
Output capacitance	C_{oss}	-	60	-	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	-	50	-	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$*	-	9	-	ns	I_D=−1.2A, V_{DD} ≒−10V
Rise time	t_r *	-	25	-	ns	V_{GS}=−4.5V
Turn-off delay time	$t_{d(off)}$*	-	55	-	ns	R_L=8.3Ω
Fall time	t_f *	-	45	-	ns	R_G=10Ω
Total gate charge	Q_g *	-	6.7	-	nC	I_D=−2.4A
Gate-source charge	Q_{gs} *	-	1.7	-	nC	V_{DD} ≒−10V
Gate-drain charge	Q_{gd} *	-	0.6	-	nC	V_{GS}=−4.5V

*Pulsed

●**Body diode characteristics** (Source-Drain) (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward Voltage	V_{SD}*	-	-	−1.2	V	I_s=−2.4A, V_{GS}=0V

*Pulsed

●Electrical characteristic curves<Tr1(Nch)>

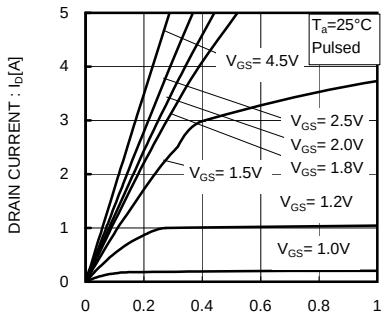


Fig.1 Typical Output Characteristics(Ⅰ)

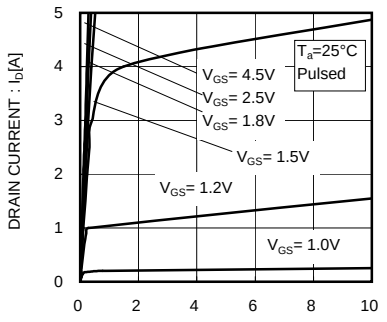


Fig.2 Typical Output Characteristics(Ⅱ)

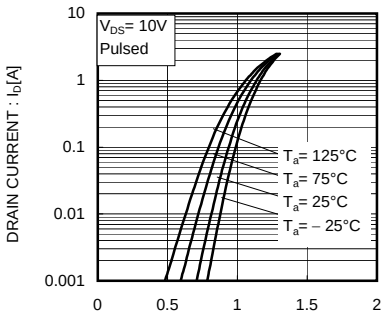


Fig.3 Typical Transfer Characteristics

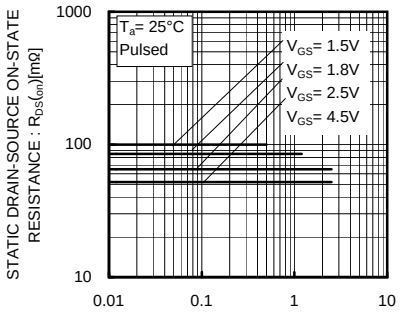


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(Ⅰ)

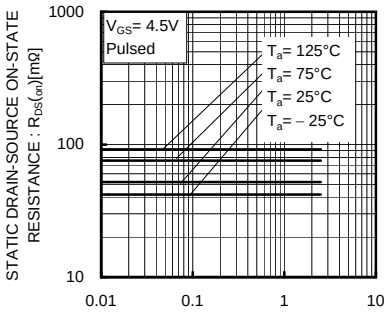


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(Ⅱ)

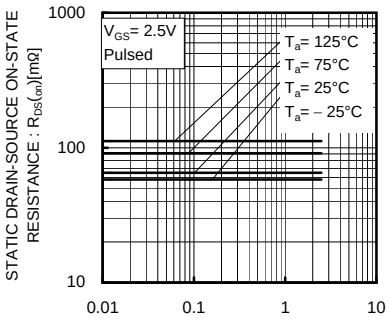


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(Ⅲ)

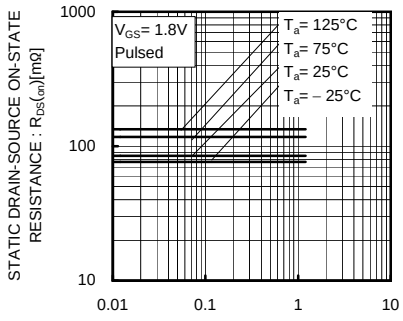


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(Ⅳ)

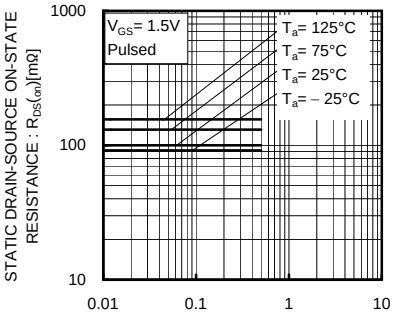


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(Ⅴ)

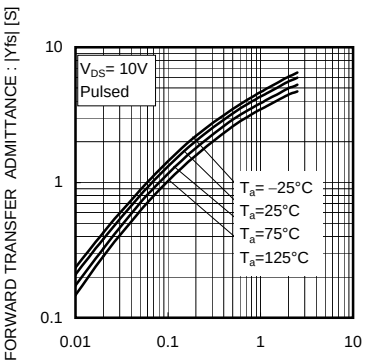


Fig.9 Forward Transfer Admittance vs. Drain Current

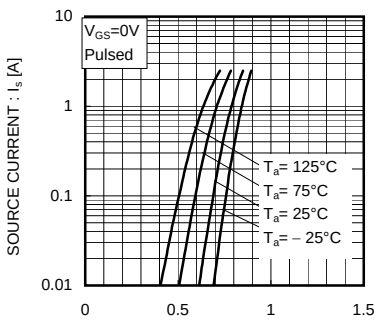


Fig.10 Reverse Drain Current vs. Sourse-Drain Voltage

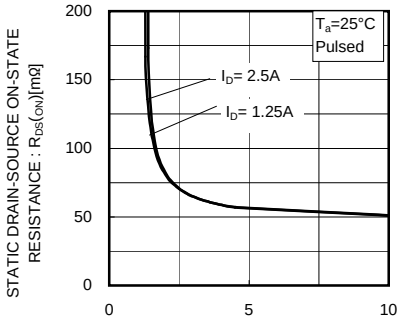


Fig.11 Static Drain-Source On-State Resistance vs. Gate Source Voltage

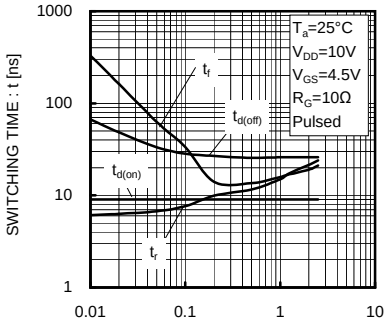


Fig.12 Switching Characteristics

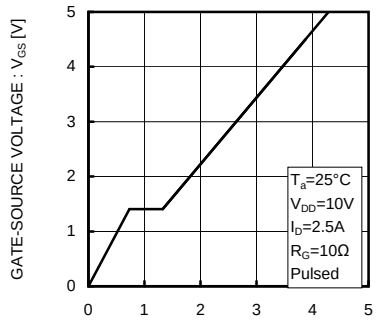


Fig.13 Dynamic Input Characteristics

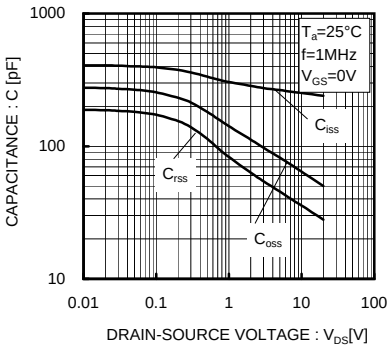


Fig.14 Typical Capacitance vs. Drain-Source Voltage

●**Electrical characteristic curves**<Tr2(Pch)>

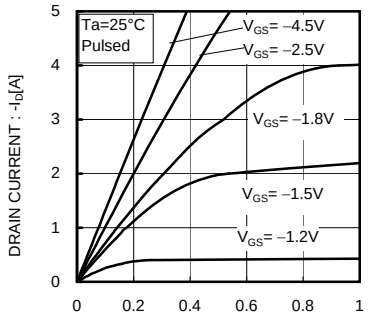


Fig.1 Typical output characteristics(Ⅰ)

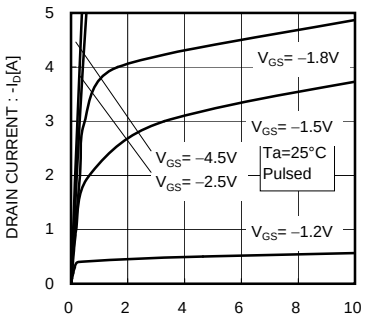


Fig.2 Typical output characteristics(Ⅱ)

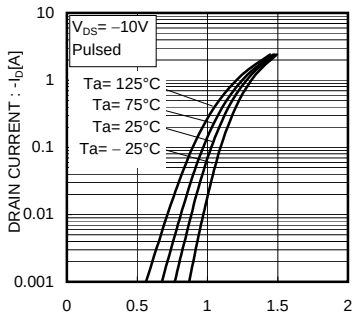


Fig.3 Typical Transfer Characteristics

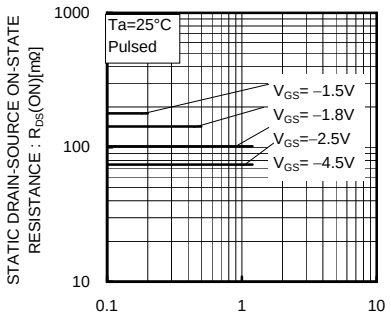


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current(Ⅰ)

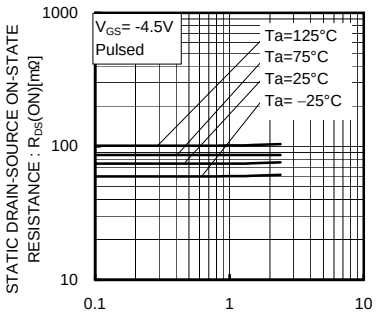


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current(Ⅱ)

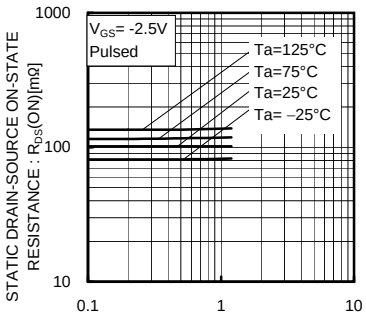


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current(Ⅲ)

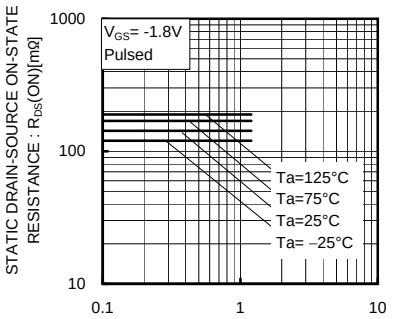


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(Ⅳ)

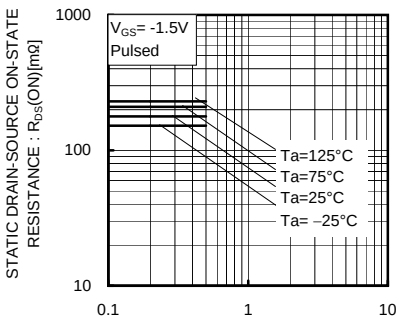


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(Ⅴ)

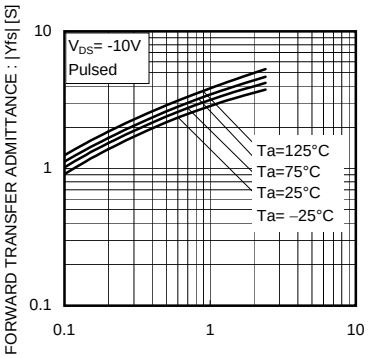


Fig.9 Forward Transfer Admittance vs. Drain Current

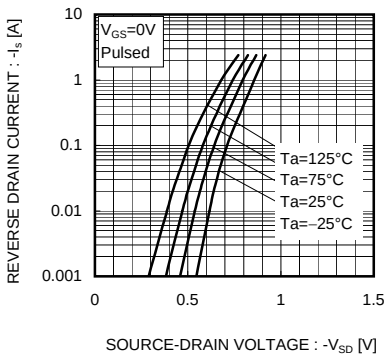


Fig.10 Reverse Drain Current vs. Sourse-Drain Voltage

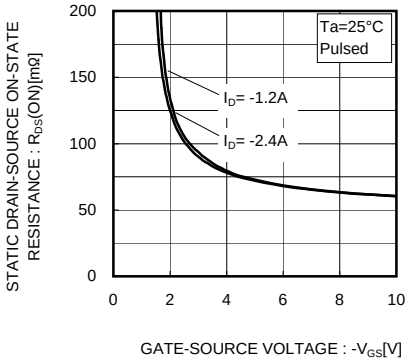


Fig.11 Static Drain-Source On-State Resistance vs. Gate Source Voltage

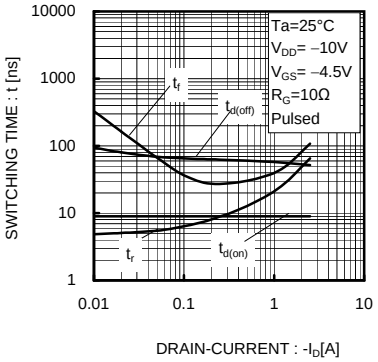


Fig.12 Switching Characteristics

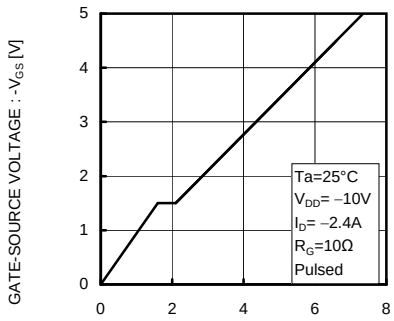


Fig.12 Dynamic Input Characteristics

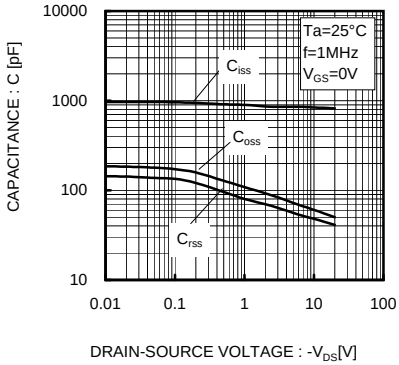


Fig.13 Typical Capacitance vs. Drain-Source Voltage

●Measurement circuits

<Tr1(Nch)>

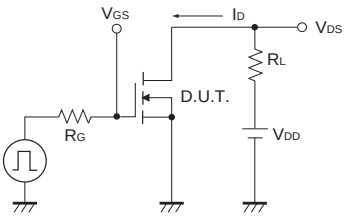


Fig.1-1 Switching time measurement circuit

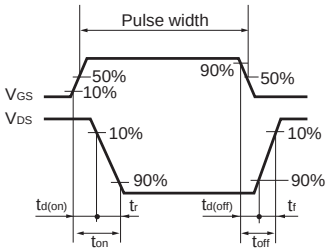


Fig.1-2 Switching waveforms

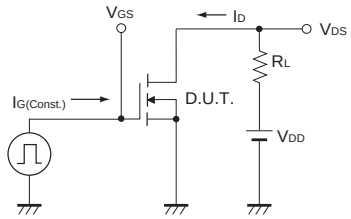


Fig.2-1 Gate charge measurement circuit

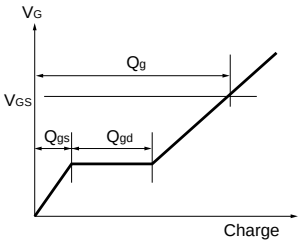


Fig.2-2 Gate Charge Waveform

<Tr2(Pch)>

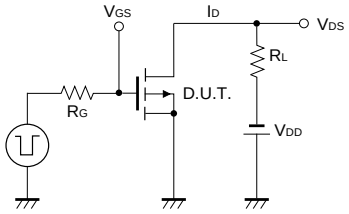


Fig 3-1 Switching Time Measurement Circuit

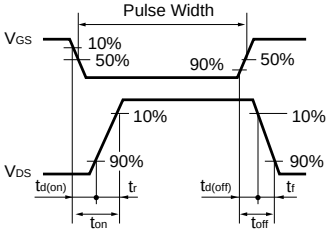


Fig 3-2 Switching Waveforms

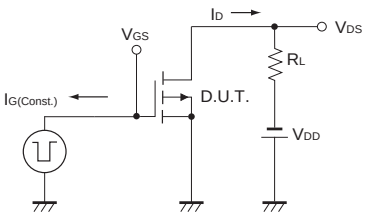


Fig 4-1 Gate charge measurement circuit

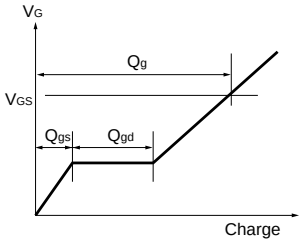


Fig 4-2 Gate Charge Waveform

●Notice

This product might cause chip aging and breakdown under the large electrified environment. Please consider to design ESD protection circuit.

Notes

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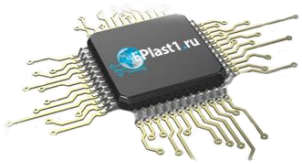
Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

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

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