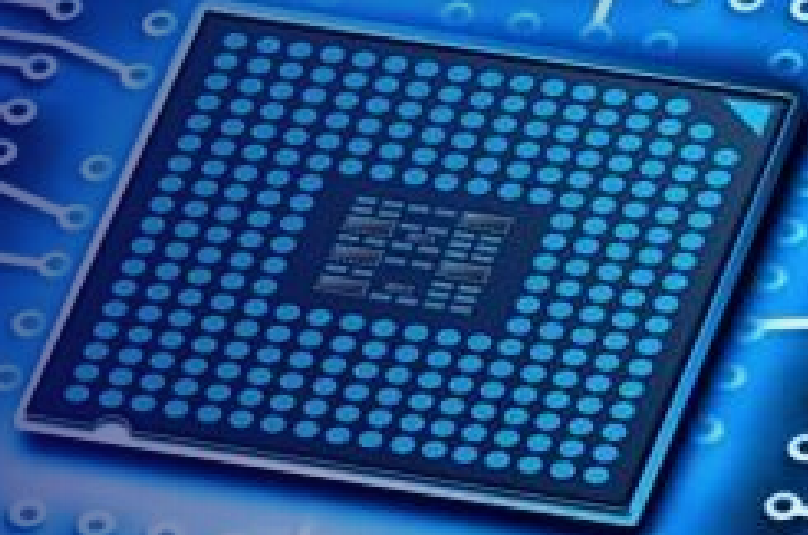


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SEMICONDUCTOR

P-channel Power MOSFETs

Oct. 2024



Global Presentation

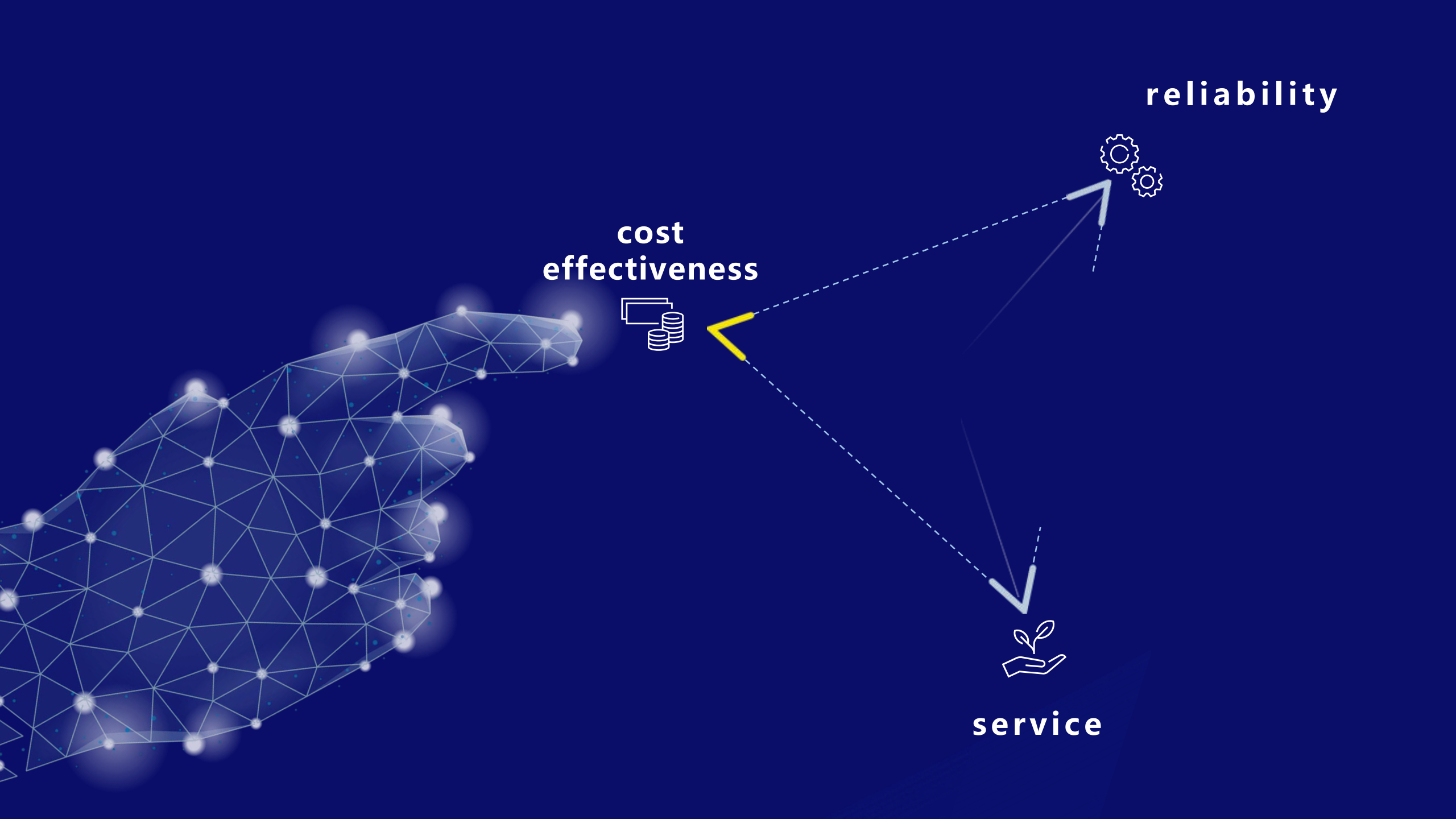
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 R&D

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 Distributors



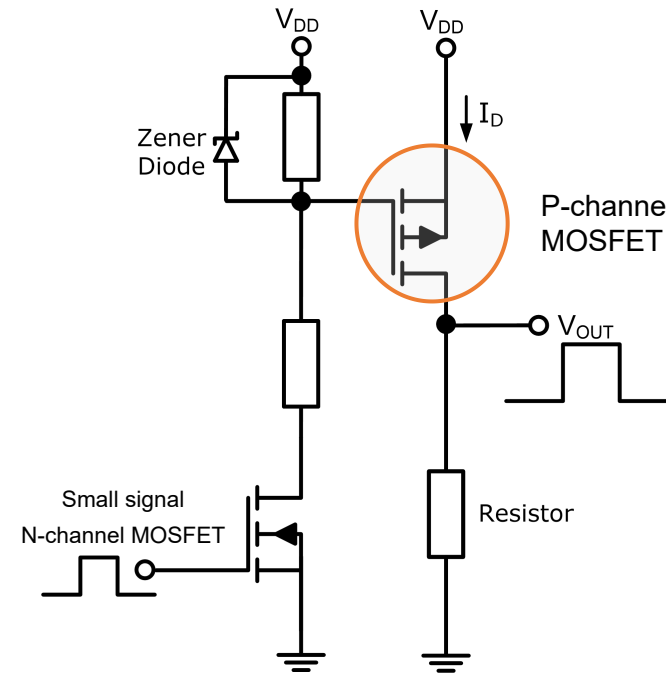
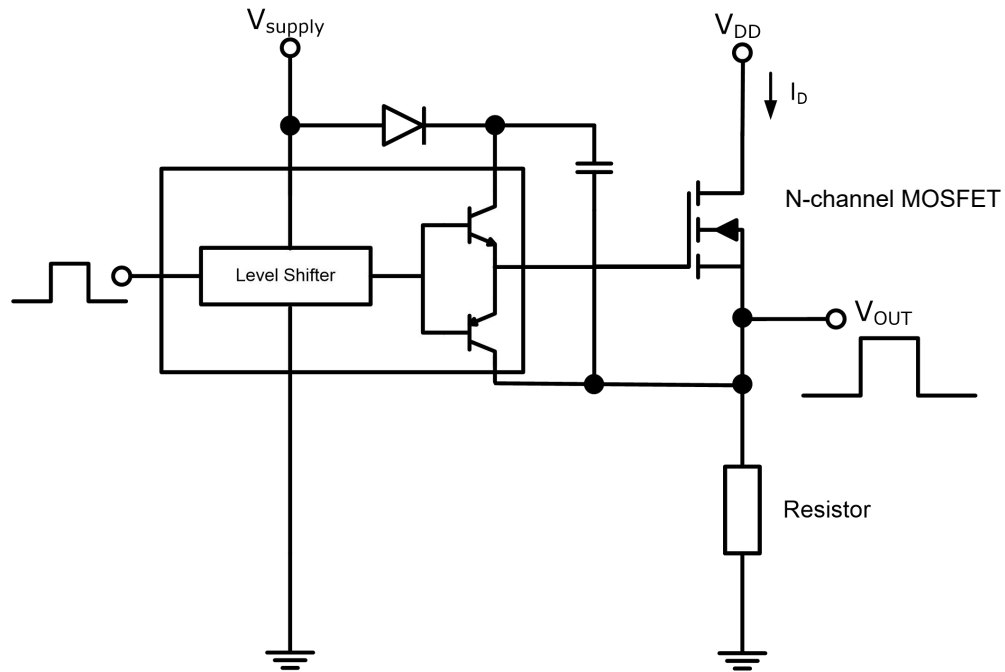
reliability

**cost
effectiveness**

service

Introduction to P-channel MOSFETs

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simple gate driving

cost effectiveness

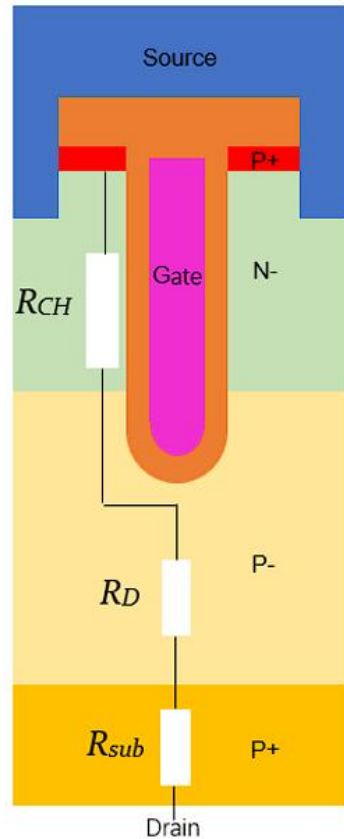
Fast switching

Energy efficiency

Avalanche ruggedness

Vds range p-250v to-12V

Resistance Distribution



$$R_{DSON} = R_{CH} + R_D + R_{sub}$$

$$R_{CH} = \frac{L(W_m + W_t)}{2\mu_{ns}C_{ox}(V_{GS} - V_{TH})}$$

$$R_D = \rho_D \left\{ 0.5(W_m + W_t) \ln\left(1 + \frac{W_m}{W_t}\right) + (t_D - 0.5W_m) \right\}$$

$$R_{sub} = \rho_s t_s$$

L : Channel length

ρ_D : Epitaxial resistance

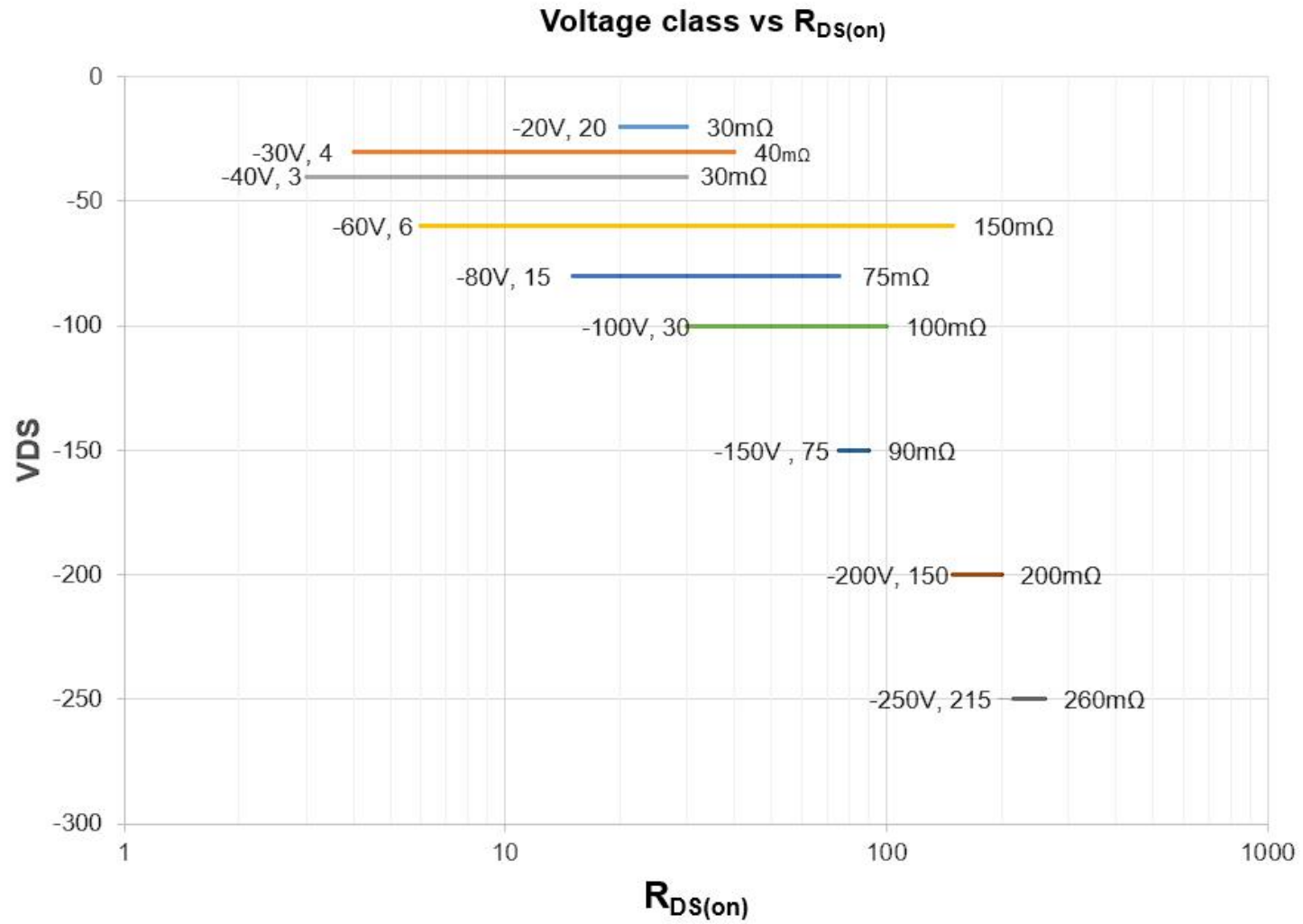
$W_m + W_t$: Cell pitch

ρ_s : Substrate resistivity

C_{ox} : Gate oxide capacitance

t_s : Substrate thickness


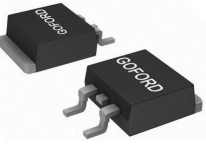
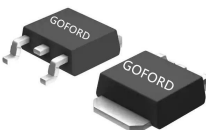
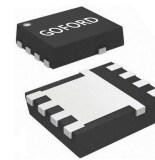
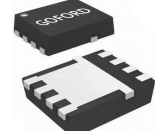
P-channel MOSFET $R_{DS(on)}$ range by voltage class






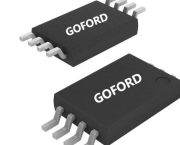
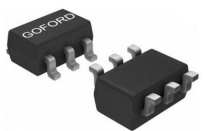
P-channel Package Portfolio

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Packages optimized for high power applications and high current carrying capability

	TO-220	D2PAK	DPAK	DFN 5x6	DFN 3 x 3
					
Height (mm)	4.57	4.57	2.3	1.17	0.75
Outline (mm)	27 x 10.16	15x 10	10.1 x 6.6	5.4 x 6.15	3.15x 3.3

Packages optimized for small power and small signal applications

	SOT-223	SOT-23	SOP-8	TSSOP-8	SOT-23-6
					
Height (mm)	1.6	1.05	1.45	0.27	1.1
Outline (mm)	6.6 x 7.0	3 x 2.55	6.0 x 4.9	6.6x3.05	2.9x2.8

Assessment Equipment

GOFORD



静态FT测试仪



雪崩测试仪



高温高湿反偏系统



TCT



高温反偏系统



IR REFLOW



显微镜



烘箱



ESD测试仪



电容测试仪



PCT

Reliability test

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Standard

Test Item		MSL3, TCT, PCT, THT, HTST, SD, HTRB, HTGB			
Test No.	Test item	Test Condition	Test Standard	Qty (pcs)	Rej/ Acc
1	MSL3 Preconditioning	BAKE: 125± 5 °C 24 H Soak: 30°C 60%RH, 192H Reflow: 260°C ,3cycles	JESD22 - A11 3	190	0/190
2	TCT Temperature Cycle Test	- 65°C - 150 °C, 500cycles	JESD22 - A10 4	45	0/45
3	PCT Pressure Cooker Test	T=121°C , RH=100% PA =2atm, 48 H	JESD22 - A10 2	45	0/45
4	THT Temperature & Humidity Test	85 °C, 85%RH ,500H	JESD22 - A10 1	45	0/45
5	HTST High Temperature Storage Test	150°C, 500 H	JESD22-A103	45	0/45
6	SD Solderability	245± 5 °C ,5± 1S	J- STD-002	10	0/10
7	HTRB	Tj=150°C , Bias= 80%VDS 168/500/1000H	JESD22 - A108	77	1/77
8	HTGB	Tj= 150°C Bias= 100%VGS 168/500/1000H	JESD22 -A108	77	1/77

Industrial

Test Item		MSL2, TCT, PCT, THT, HTST, SD, HTRB, HTGB			
Test No.	Test item	Test Condition	Test Standard	Qty (pcs)	Rej/ S.S
1	MSL2 Preconditioning	BAKE: 125± 5 °C 24 H Soak: 85°C 60%RH, 168H Reflow: 260°C ,3cycles	JESD22 - A113	318	0/318
2	TCT Temperature Cycle Test	- 65°C - 150°C , 500cycles	JESD22 - A104	77	0/77
3	PCT Pressure Cooker Test	T= 121°C , RH= 100% PA =2atm , 96 H	JESD22 - A102	77	0/77
4	THT Temperature & Humidity Test	85°C , 85% RH , 1000H	JESD22 - A101	77	0/77
5	HTST High Temperature Storage Test	150°C , 1000H	JESD22-A103	77	0/77
6	SD Solderability	245± 5 °C ,5± 1S	J- STD-002	10	0/ 10
7	HTRB	Tj=150°C , Bias= 80%VDS 1000H	JESD22 - A108	77	0/ 77
8	HTGB	Tj= 150°C Bias= 100%VGS 1000H	JESD22 -A108	77	0/77

Reliability test

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Automotive

Test Item		MSL1 , TCT, PCT, THT, HTST, UHAST,SD, HTRB, HTGB, H3TRB			
Test No.	Test item	Test Condition	Test Standard	Qty (pcs)	Rej/S.S
1	MSL1 Preconditioning	BAKE:125±5°C 24H Soak:85°C 85%RH,168H Reflow: 260°C ,3cycles	JESD22-A113	395	0/395
2	TCT Temperature Cycle Test	-65°C-150°C,1000cycles	JESD22-A104	77	0/395
3	PCT Pressure Cooker Test	T=121°C, RH=100% PA =2atm,96H	JESD22-A102	77	0/77
4	THT Temperature & Humidity Test	85°C,85%RH ,1000H	JESD22-A101	77	0/77
5	HTST High Temperature Storage Test	150°C,1000H	JESD22-A103	77	0/77
6	UHAST ubias Highly Accelerated Stress Test	130°C, 85%RH, PA =2.3atm,96H	JESD22 -A118	77	0/77
7	SD Solderability	245±5°C,5±1S	J-STD-002	10	0/ 10
8	HTRB	Tj=150°C, Bias= 100%VDS 1000H	JESD22-A108	77	0/77
9	HTGB	Tj= 150°C Bias=100%VGS 1000H	JESD22 -A108	77	0/77
10	H3TRB	85°C,85%RH Bias= 80%VDS 1000H	JESD22 -A101	77	0/77

P-channel: - 20 V

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Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
G06P01E	SOT-23	-12V	-4A	-0.6V		23mΩ	14	Standard
2301		-20V	-3A	-0.65V		42mΩ	8.5	Standard
3415A		-20V	-4A	-0.7V		28mΩ	10	Standard
G2305		-20V	-4A	-0.7V		29mΩ	12	Standard
G09P02L	SOT-23-3L	-20V	-9A	-0.7V		17mΩ	72	Standard
G350P02LLE	SOT-23-6L	-20V	-4.5A	-0.7V		27mΩ	17.2	Standard
G220P02D2	DFN2*2-6L	-20V	-8A	-0.7V	15mΩ	19mΩ	14	Standard
G170P02D2		-20V	-16A	-0.7V		13mΩ	30	Standard
G170P02D32	DFN3*3-8L	-20V	-20A	-0.7V		15mΩ	30	Standard
G45P02D3		-20V	-45A	-0.65V		6mΩ	44	Standard
G075P02D5	DFN5*6-8L	-20V	-45A	-0.65V		6.3mΩ	44	Standard
G040P02D5		-20V	-90A	-0.65V		3.5mΩ	134	Standard
G085P02TS	TSSOP-8	-20V	-8.2A	-0.55-0.9V		7mΩ	29	Standard
G090P02S	SOP-8	-20V	-11A	-0.65V		7.5mΩ	47	Standard
G11S		-20V	-11A	-0.75V		15mΩ	47	Standard
G70P02K	TO-252	-20V	-45A	-0.65V		5.9mΩ	44	Standard
G040P02K		-20V	-90A	-0.65V		3.4mΩ	134	Standard
G040P02T	TO-220	-20V	-90A	-0.65V		3.5mΩ	134	Standard

P-channel: - 30 V

GOFORD

Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
2301H	SOT-23	-30V	-2.8A	-1.4V	60mΩ	85mΩ	4.5	Standard
3401		-30V	-4.2A	-0.8v	42mΩ	49mΩ	8.5	Standard
G500P03IE		-30V	-4.6A	-0.8V	42mΩ	48mΩ	13	Standard
G3035		-30V	-4.6A	-1.5V	41mΩ	61mΩ	13	Standard
G3035L	SOT-23-3L	-30V	-4.1A	-1.5V	48mΩ	60mΩ	12.5	Standard
G3401L		-30V	-4.4A	-0.8V	43mΩ	51mΩ	9.3	Standard
G7P03L		-30V	-7A	-1.5V	19mΩ	27mΩ	29	Standard
G7P03D2	DFN2*2-6L	-30V	-7A	-0.9V	17mΩ	21mΩ	19	Standard
G12P03D3	DFN3*3-8L	-30V	-12A	-1.5V	16mΩ	22mΩ	24.5	Standard
G10P03		-30V	-22A	-0.9V		20mΩ	44	Standard
G170P03D3		-30V	-30A	-1.4V	12mΩ	17mΩ	35	Standard
G16P03D3		-30V	-45A	-1.7V	8.5mΩ	12mΩ	35	Standard
G18P03D3		-30V	-50A	-1.5V	7.5mΩ	11mΩ	45	Standard
G80P03D5	DFN5*6-8L	-30V	-65A	-1.5V	5mΩ	6.5mΩ	95	Standard
G40P03D5		-30V	-35A	-1.4V	8.5mΩ	11.5mΩ	50	Standard
G050P03D5		-30V	-85A	-1.4V	3mΩ	4mΩ	111	Standard

P-channel: - 30 V

GOFORD

Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
G9435S	SOP-8	-30V	-5.1A	-1.6V	48mΩ~55mΩ	73mΩ~105mΩ	12	Standard
G7P03S		-30V	-9A	-1.6V	16mΩ	23mΩ	24.5	Standard
4435		-30V	-11A	-1.4V	12mΩ	18mΩ	40	Standard
G18P03S		-30V	-15A	-1.6V	8.1mΩ	10.5mΩ	58	Standard
G16P03S		-30V	-16A	-1.5V	9.9mΩ	14mΩ	35	Standard
G050P03S		-30V	-25A	-1.2V	4.5mΩ	5.5mΩ	111	Standard
G160P03K	TO-252	-30V	-30A	-1.5V	12mΩ	17mΩ	31.2	Standard
G160P03KI		-30V	-30A	-1.5V	12mΩ	17mΩ	31.2	Standard
G40P03K		-30V	-40A	-1.7V	7.5mΩ	10mΩ	50	Standard
G80P03K		-30V	-80A	-1.4V	4.5mΩ	6mΩ	30	Standard
G050P03K		-30V	-85A	-1.5V	3.2mΩ	4.3mΩ	111	Standard
G050P03T	TO-220	-30V	-85A	-1.2V	4mΩ	5mΩ	111	Standard

P-channel: - 40 V

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Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification	
5P40	SOT-23-3L	-40V	-5A	-1.7V	57mΩ	77mΩ	14	Standard	
G07P04S	SOP-8	-40V	-7A	-1.5V	14mΩ	18mΩ	31	Standard	
G75P04S		-40V	-20A	-1.4V	5.3mΩ	6.9mΩ	106	Standard	
G13P04S		-40V	-13A	-1.8V	13mΩ		40	Standard	
G200P04D3	DFN3*3-8L	-40V	-20A	-1.7V	13mΩ	17mΩ	54	Standard	
G26P04D5	DFN5*6-8L	-40V	-26A	-1.5V	15mΩ	18mΩ	45	Standard	
G35P04D5		-40V	-35A	-1.7V	11mΩ	15mΩ	60	Standard	
G75P04D5		-40V	-80A	-1.7V	4.7mΩ	6.3mΩ	106	Standard	
G26P04K	TO-252	-40V	-26A	-1.5V	13mΩ	17mΩ	42	Standard	
45P40		-40V	-45A	-1.5V	10.5mΩ		42	Standard	
G75P04K		-40V	-80A	-1.5V	5mΩ	6.7mΩ	106	Standard	
G90P04K		-40V	-90A	-1.8V	5.8mΩ		97	Standard	
G70P04K		-40V	-70A	-1.4V	7mΩ	9mΩ	42	Standard	
G450P04K		-40V	-11A	-1.6V	32mΩ	45mΩ	25	Standard	
G12P04K		-40V	-12A	-1.4V	29mΩ	35mΩ	25	Standard	
G15P04K		-40V	-15A	-1.5V	25mΩ	30mΩ	25	Standard	
G45P40T		TO-220	-40V	-45A	-1.5V	10.5mΩ	15mΩ	42	Standard
G75P04T			-40V	-80A	-1.7V	5.2mΩ	6.8mΩ	106	Standard
G040P04T	-40V		-180A	-1.6V	2.9mΩ	3.7mΩ	206	Standard	
G75P04F	TO-220F	-40V	-54A	-1.45V	5.1mΩ	6.6mΩ	106	Standard	
G75P04FI		-40V	-54A	-1.5V	6mΩ	7.5mΩ	106	Standard	
G90P04F		-40V	-68A	-1.5V	6mΩ	8mΩ	42	Standard	
G75P04M	TO-263	-40V	-80A	-1.7V	5.3mΩ	7.0mΩ	106	Standard	
G040P04M		-40V	-180A	-1.6V	2.9mΩ	3.7mΩ	206	Standard	

P-channel: - 60 V

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Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
G02P06	SOT-23	-60V	-1.6A	-1.8V	150mΩ	180mΩ	11.3	Standard
G1K1P06LH	SOT-23-3L	-60V	-4.5A	-3.0V	93mΩ		11	Standard
G05P06L		-60V	-5A	-1.7V	65mΩ	77mΩ	37	Standard
G700P06LL	SOT-23-6L	-60V	-5A	-1.8V	61mΩ	74mΩ	15.8	Standard
G1K1P06LL		-60V	-3A	-1.8V	85mΩ	105mΩ	25	Standard
G800P06LL		-60V	-3.5A	-1.5V	60mΩ	92mΩ	12	Standard
G1K1P06HH	SOT-223	-60V	-4.5A	-2.7V	90mΩ		11	Standard
G700P06H		-60V	-5A	-1.7V	60mΩ	73mΩ	15.8	Standard
G6P06	SOP-8	-60V	-3.5A	-1.8V	58mΩ	70mΩ	29	Standard
G400P06S		-60V	-6A	-2.5V	33mΩ		46	Standard
G300P06S		-60V	-6.5A	-2.4V	25mΩ		49	Standard
G230P06S		-60V	-9A	-2.4V	18mΩ		62	Standard
G170P06S		-60V	-12A	-2.5V	14mΩ		75	Standard
G08P06D3	DFN3*3-8L	-60V	-8A	-2.8V	40mΩ		25	Standard
G700P06D3		-60V	-18A	-1.7V	57mΩ	69mΩ	25	Standard
G700P06D5	DFN5*6-8L	-60V	-25A	-1.7V	58mΩ	70mΩ	25	Standard
G300P06D5		-60V	-40A	-2.4V	25mΩ		49	Standard
G230P06D5		-60V	-48A	-2.4V	18mΩ		62	Standard
G65P06D5		-60V	-65A	-2.5V	13.5mΩ		75	Standard
GT065P06D5		-60V	-103A	-1.6V	5.9mΩ	7.4mΩ	62	Standard

P-channel: - 60 V

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Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
G20P06K	TO-252	-60V	-20A	-2.6V	31mΩ		46	Standard
G12P06K		-60V	-12A	-1.7V	57mΩ	69mΩ	23	Standard
25P06		-60V	-25A	-2.4V	25mΩ		37	Standard
G230P06K		-60V	-60A	-2.5V	17mΩ		62	Standard
G180P06K		-60V	-45A	-2.5V	15.5mΩ		46	Standard
G65P06K		-60V	-65A	-2.5V	13mΩ		75	Standard
G700P06J	TO-251	-60V	-23A	-1.7V	60mΩ	70mΩ	23	Standard
G700P06T	TO-220	-60V	-25A	-1.6V	58mΩ	70mΩ	23	Standard
G400P06T		-60V	-32A	-2.4V	30mΩ		46	Standard
G300P06T		-60V	-40A	-2.5V	25mΩ		49	Standard
G230P06T		-60V	-60A	-2.6V	18mΩ		62	Standard
G65P06T		-60V	-65A	-2.5V	14mΩ		75	Standard
GT065P06T		-60V	-82A	-1.7V	6.2mΩ	7.8mΩ	62	Standard
G115P06T		-60V	-98A	-2.7V	9.3mΩ		125	Standard
G120P06T		-60V	-120A	-2.5V	7mΩ		230	Standard
GT042P06T		-60V	-160A	-2.3V	3.7mΩ	5.5mΩ	305	Standard
G080P06T		-60V	-195A	-2.4V	6.3mΩ		186	Standard
G230P06F	TO-220F	-60V	-42A	-3.0V	18mΩ		62	Standard
G65P06F		-60V	-65A	-2.6V	13mΩ		75	Standard
G115P06M	TO-263	-60V	-98A	-2.7V	9mΩ		125	Standard
G120P06M		-60V	-120A	-2.5V	7mΩ		230	Standard
GT042P06M		-60V	-160A	-2.0V	3.6mΩ	5.4mΩ	305	Standard
G170P06M		-60V	-65A	-2.5V	12mΩ		75	Standard
G080P06M		-60V	-195A	-2.4V	6.2mΩ		186	Standard

P-channel: - 80 V

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Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
GT700P08S	SOP-8	-80V	-6.5A	-3V	60mΩ		75	Standard
GT700P08D3	DFN3*3-8L	-80V	-16A	-3V	57mΩ		75	Standard
GT180P08D5	DFN5*6-8L	-80V	-78A	-1.8V	14mΩ	16mΩ	62.1	Standard
GT700P08K	TO-252	-80V	-20A	-3V	60mΩ		75	Standard
G20P08K		-80V	-20A	-1.7V	52mΩ	58mΩ	48	Standard
GT750P08K		-80V	-28A	-2V	52mΩ	65mΩ	36	Standard
GT700P08T	TO-220	-80V	-25A	-3V	58mΩ		75	Standard
GT180P08T		-80V	-89A	-1.8V	14mΩ	16mΩ	62	Standard
GT180P08M	TO-263	-80V	-89A	-1.8V	14mΩ	16mΩ	62	Standard

P-channel: - 100 V

GOFORD

Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
GT6K2P10IH	SOT-23	-100V	-1A	-2.45V	545mΩ		10	Standard
G04P10HE	SOT-223	-100V	-4A	-1.55V	177mΩ	190mΩ	25	Standard
G2K2P10D3E	DFN3*3-8L	-100V	-10A	-1.6V	175mΩ	188mΩ	33	Standard
GT750P10D5	DFN5*6-8L	-100V	-24A	-1.8V	50mΩ	62mΩ	40	Standard
G2K2P10SE	SOP-8	-100V	-3.5A	-1.6V	170mΩ	180mΩ	23	Standard
GT6K2P10KH	TO-252	-100V	-4.3A	-2.5V	525mΩ		10	Standard
G12P10K		-100V	-12A	-1.6V	178mΩ	192mΩ	33	Standard
G12P10KE		-100V	-12A	-1.7V	178mΩ	192mΩ	33	Standard
G20P10KE		-100V	-20A	-1.5V	94mΩ		70	Standard
GT750P10K		-100V	-24A	-2.2V	56mΩ	73mΩ	40	Standard
GT500P10K		-100V	-30A	-2V	45mΩ	54mΩ	36	Standard
GT400P10K		-100V	-35A	-1.7V	29mΩ	34mΩ	41	Standard
G12P10TE		TO-220	-100V	-12A	-1.9V	170mΩ	180mΩ	33
GT400P10T	-100V		-35A	-1.9V	28mΩ	33mΩ	41	Standard
GT250P10T	-100V		-56A	-3.1V	25mΩ		73	Standard
GT750P10M	TO-263	-100V	-24A	-2V	53mΩ	65mΩ	40	Standard
GT400P10M		-100V	-35A	-1.7V	29mΩ	33mΩ	41	Standard
GT250P10M		-100V	-56A	-2.8V	27mΩ		73	Standard
GT240P10M		-100V	-60A	-1.4V	19mΩ	22mΩ	60	Standard

P-channel: - 150 V

GOFORD

Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
G01P15L	SOT-23-3L	-150V	-1A	-2V	0.72Ω	0.78Ω	12	Standard
G01P15LL	SOT-23-6L	-150V	-1A	-2V	0.77Ω		12	Standard
G900P15D5	DFN5*6-8L	-150V	-35A	-2.5V	65mΩ		27	Standard
G2K8P15S	SOP-8	-150V	-2.2A	-2.2V	277mΩ		11	Standard
G6K8P15SE	SOP-8	-150V	-6A	-2.6V	660mΩ		11	Standard
G2K8P15K	TO-252	-150V	-12A	-2.2V	271mΩ		11	Standard
G6K8P15KE	TO-252	-150V	-12A	-2.5V	660mΩ		11	Standard
G1K6P15K	TO-252	-150V	-24A	-2.5V	132mΩ		22	Standard
GT1K2P15K	TO-252	-150V	-27A	-2.0V	90mΩ	100mΩ	86	Standard
G900P15K	TO-252	-150V	-35A	-2.5V	65mΩ		27	Standard
G900P15T	TO-220	-150V	-35A	-2.5V	62mΩ		27	Standard
G900P15M	TO-263	-150V	-35A	-2.6V	62mΩ		27	Standard
G450P15M	TO-263	-150V	-70A	-2.5V	33mΩ		177	Standard

P-channel: - 200 V/ -250V

GOFORD

Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
GT2K0P20T	TO-220	-220V	-19A	-3V	167mΩ		70	Standard
G2K6P25K	TO-252	-250V	-28A	-4V	215mΩ		77	Standard
G2K6P25T	TO-220	-250V	-28A	-4V	215mΩ		77	Standard

Dual: P+P

GOFORD

Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
G4953S	SOP-8 DUAL	-30V	-5A	-1.4V	37mΩ	52mΩ	11	Standard
G220P03S2		-30V	-9A	-1.5V	17mΩ	24mΩ	24.5	Standard
G170P03S2		-30V	-11A	-1.6V	15mΩ	20mΩ	40	Standard
G120P03S2		-30V	-16A	-1.6V	11mΩ	15mΩ	35	Standard
G200P04S2		-40V	-9A	-1.5V	16mΩ	20mΩ	42	Standard
G1K8P06S2		-60V	-3.2A	-1.9V	140mΩ	175mΩ	11.3	Standard
G2K2P10S2E		-100V	-3.5A	-1.6V	170mΩ	180mΩ	23	Standard
G220P03D32	DFN3*3-8L DUAL	-30V	-12A	-1.5V	18mΩ	25mΩ	25	Standard

Dual: N+P

GOFORD

Product	Package	VDS [V]	ID max @25°C [A]	VGS(th) [V]	RDS(on) typ @10 V [mΩ]	RDS(on) typ @4.5 V [mΩ]	QG typ @10 V [nC]	Qualification
G1NP02LLE	SOT-23-6L DUAL	20V/-20V	1.3A/-1.1A	0.55V/-0.55V		170mΩ/380mΩ	1/1.22	Standard
6703		20V/-20V	2.9A/-3A	0.85V/-0.7V		30mΩ~45mΩ / 80mΩ~110mΩ	4	Standard
G300C03L6		30V/-30V	5.6A/-4.2A	1V/-0.8V	22mΩ / 43mΩ	25mΩ / 51mΩ	16/8.5	Standard
6706	SOP-8 DUAL	20V/-20V	6.5A/-5A	0.7V/-0.7V		12mΩ~18mΩ / 23mΩ~28mΩ	5.2/9.2	Standard
6706A		30V/-30V	6.5A/-5A	1.5V/-1.6V	16mΩ / 35mΩ	23mΩ / 54mΩ	14.8/11	Standard
G05NP04S		40V/-40V	4.5A/-10A	1.25V/--1.9V	27.5mΩ/26mΩ	35mΩ/28mΩ	8.9/13	Standard
G4614		40V/-40V	6A/-7A	2.0V/-1.5V	26mΩ/25mΩ	37mΩ/32mΩ	15/25	Standard
G4616		40V/-40V	8A/-7A	1.5V/-1.5V	15mΩ/28mΩ	20mΩ/36mΩ	45/39	Standard
G06NP06DS2		60/-60V	3A/-6A	0.9V/-1.7V	63mΩ/360mΩ	66mΩ/73mΩ	45/42	Standard
G05NP06S2		60V/-60V	5A/-3.1A	1.5V/-1.7V	28mΩ/62mΩ	31mΩ/72mΩ	22/37	Standard
G06NP06S2		60/-60V	6A/-6A	1.5V/-2.5V	30mΩ/37mΩ	33mΩ	22/25	Standard
G1K2C10S2		100V/-100V	3A/-3.5A	1.5V/-1.8V	110mΩ/165mΩ	120mΩ/175mΩ	22/23	Standard
G05NP10S		100V/-100V	5A/-6A	2.2V/-2.2V	127mΩ/193mΩ	144mΩ/~	18/25	Standard
G100C04D52		DFN5*6-8L DUAL	40V/-40V	40A/-24A	1.8V/--1.6V	7mΩ/13mΩ	9mΩ/18mΩ	29/45
G18NP06Y	TO-252-4 DUAL	60V/-60V	18A/-18A	1.5V/-2.5V	26mΩ/33mΩ	30mΩ	22/25	Standard
G180C06Y		60V/-60V	50A/-60A	1.5/-3.0V	14mΩ/19mΩ	16mΩ	36/62	Standard

P-channel MOSFET Application Areas

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Auto



Inverter



Telecome



Tool



LED Lighting



BMS

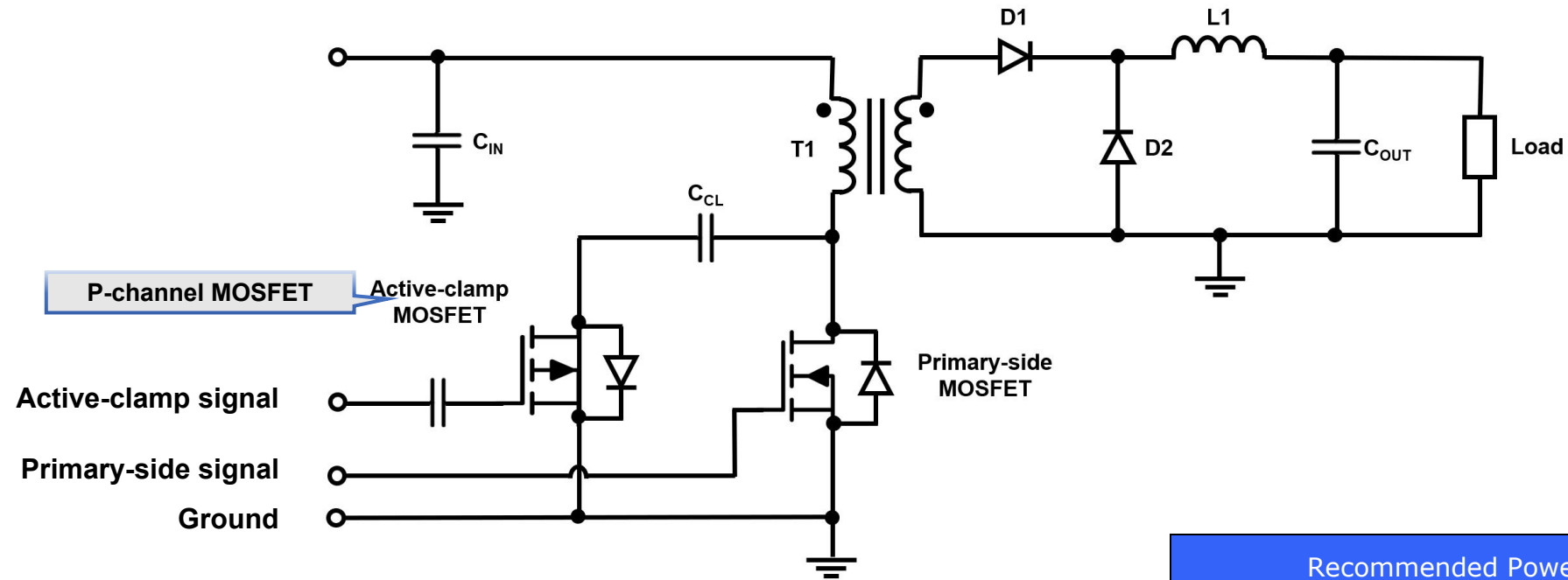


Consumer



Active-clamp Forward Converter

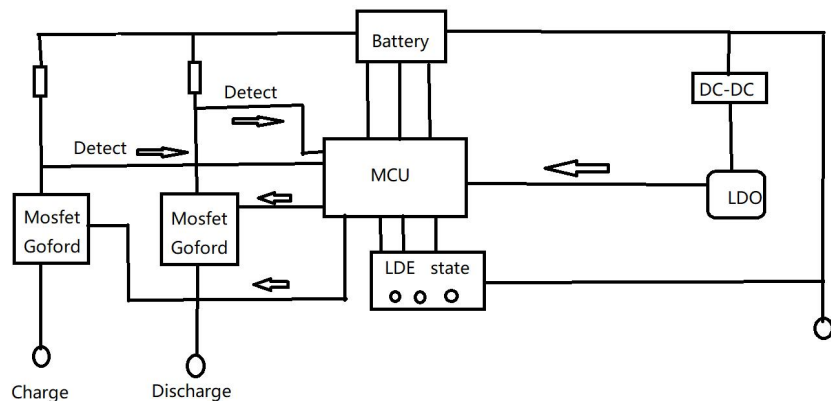
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Recommended Power MOSFETs			
Product	Package	Parameters	
G2K8P15S	SOP-8	-150V	277mΩ
G6K8P15SE	SOP-8	-150V	660mΩ
G900P15D5	DFN5*6-8L	-150V	65mΩ

Battery Protection Unit

GOFORD



Battery Voltage	Recommended Power MOSFETs		
	Product	Package	Parameters
10.8V-18V (3-5串)	G050P03S	SOP-8	4.5mΩ
	G18P03S	SOP-8	8.1mΩ
	G40P03K	TO-252	7.5mΩ
	G80P03K		4.5mΩ
	G050P03K		3.2mΩ
	G170P03D3	DFN3*3-8L	12mΩ
	G16P03D3		8.5mΩ
	G18P03D3		7.5mΩ

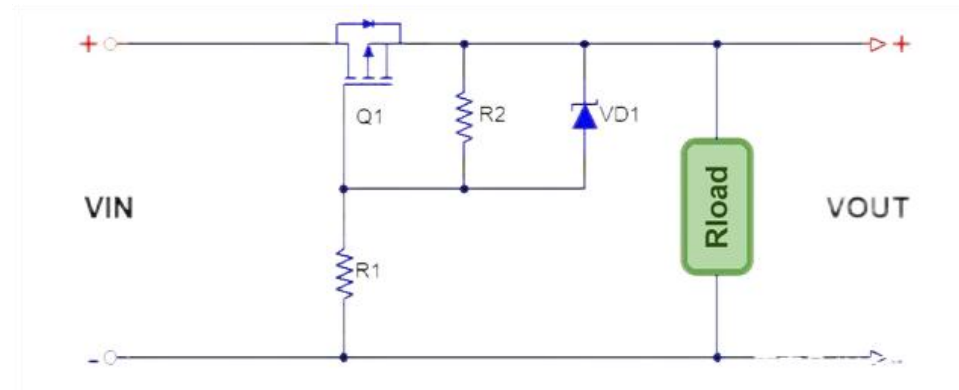
Battery Voltage	Recommended Power MOSFETs			
	Product	Package	Parameters	
10.8V-18V (3-5串)	G050P03S	SOP-8	-30V	4.5mΩ
18-28.5V (5-6串)	G75P04K	TO-252	-40V	5mΩ
	G35P04D5	DFN5*6-8L		11mΩ
	G13P04S	SOP-8		13mΩ
24-36V (7-10串)	G6P06	SOP-8	-60V	58mΩ
	G230P06S			18mΩ
	G12P06K	TO-252		57mΩ
	G08P06D3	DFN3*3-8L		40mΩ
	G700P06D3			57mΩ
	G080P06M	TO-263		6.2mΩ
36V-48V (10-13串)	GT18P08D5	DFN5*6-8L	-80V	14mΩ
	GT75P08K	TO-252		52mΩ
	GT090P08M	TO-263		8.1mΩ
	G12P10KE	TO-252		178mΩ
48V-64V (13-17串)	G2K2P10D3E	DFN3*3-8L	-100V	175mΩ
	GT240P10M	TO-263		19mΩ
	G2K8P15K	TO-252		271mΩ

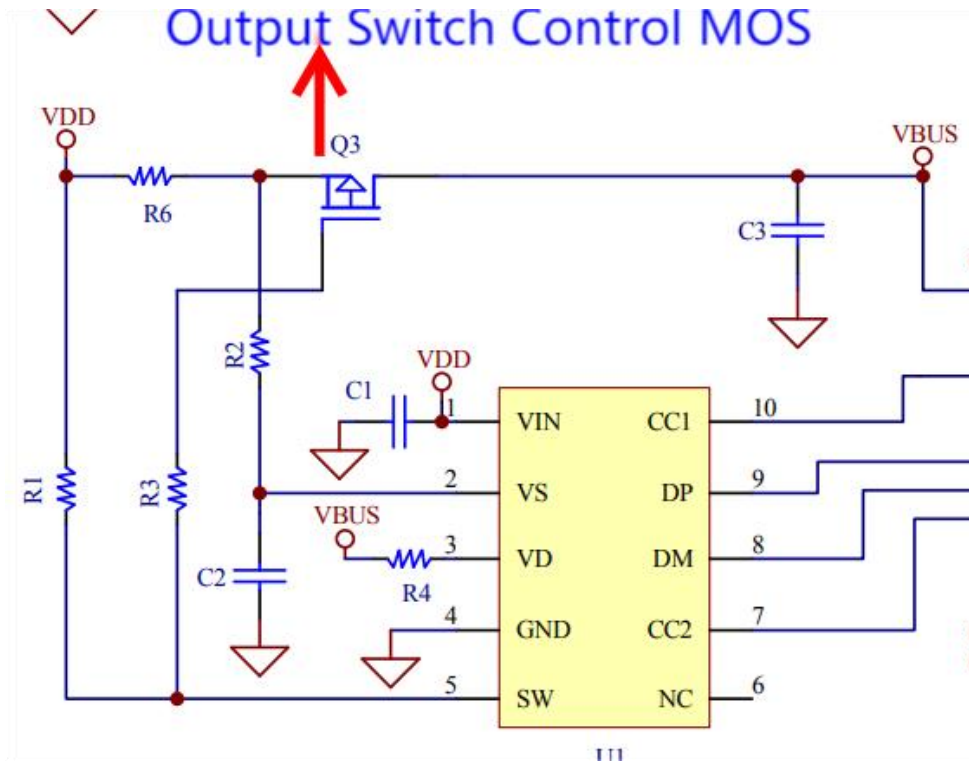
Reverse Polarity Protection

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Recommended Power MOSFETs			
Product	Package	Parameters	
3401	SOT-23	-30V	42mΩ
G500P03IE		-30V	42mΩ
G3035		-30V	41mΩ
G16P03D3	DFN3*3-8L	-30V	8.5mΩ
G18P03D3		-30V	7.5mΩ
G050P03S	SOP-8	-30V	4.5mΩ

Recommended Power MOSFETs			
Product	Package	Parameters	
G230P06S	SOP-8	-60V	18mΩ
G170P06S			14mΩ
G20P06K	TO-252	-60V	31mΩ
25P06			25mΩ
G230P06K			17mΩ
G180P06K			15.5mΩ
G65P06K	SOT-223	-60V	13mΩ
G700P06H			60mΩ
G08P06D3	DFN3*3-8L	-60V	40mΩ
G700P06D3			57mΩ



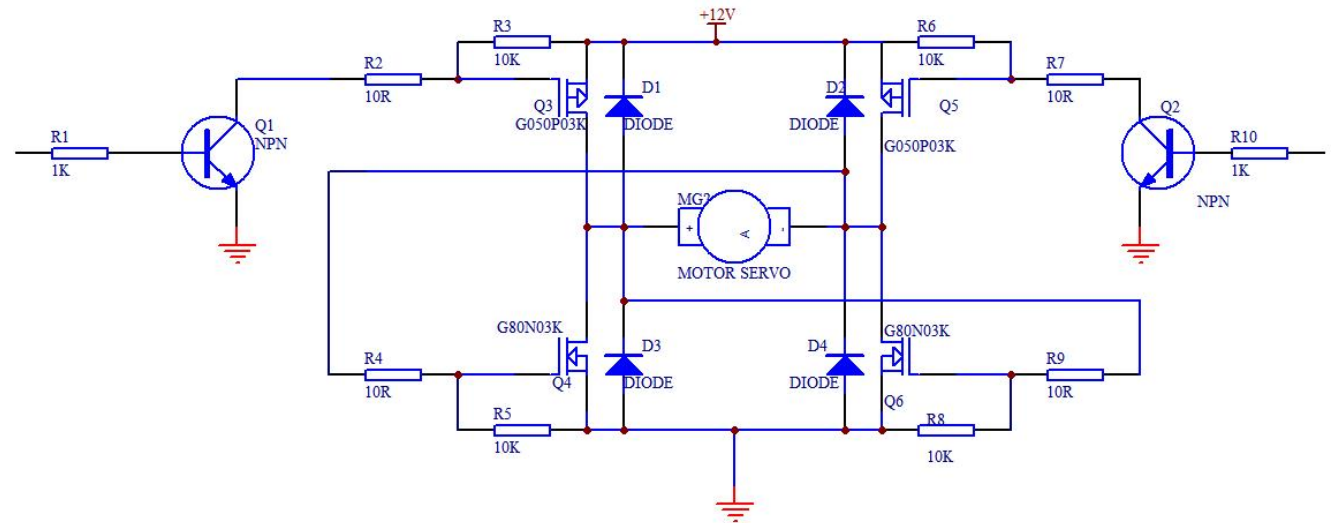


Recommended Power MOSFETs			
Product	Package	Parameters	
G090P02S	SOP-8	-20V	7.5mΩ
G16P03D3	DFN3*3-8L	-30V	8.5mΩ
G18P03D3		-30V	7.5mΩ
G050P03K	TO-252	-30V	3.2mΩ
G7P03D2	DFN2*2-6L	-30V	17mΩ

Low Voltage Motor Drive

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Recommended Power MOSFETs			
Product	Package	Parameters	
G090P02S	SOP-8	-20V	7.5mΩ
G220P02D2	DFN2*2-6L	-20V	15mΩ
G170P02D2		-20V	13mΩ
G16P03D3	DFN3*3-8L	-30V	8.5mΩ
G18P03D3		-30V	7.5mΩ
G050P03K	TO-252	-30V	3.2mΩ
G7P03D2	DFN2*2-6L	-30V	17mΩ
G700P06H	SOT-223	-60V	60mΩ
G08P06D3	DFN3*3-8L	-60V	40mΩ
G700P06D3		-60V	57mΩ
GT750P10D5	DFN5*6-8L	-100V	50mΩ
G20P10KE	TO-252	-100V	94mΩ
GT750P10K		-100V	56mΩ
G04P10HE	SOT-223	-100V	177mΩ
6706A	SOP-8 DUAL	30V/-30V	16mΩ / 35mΩ

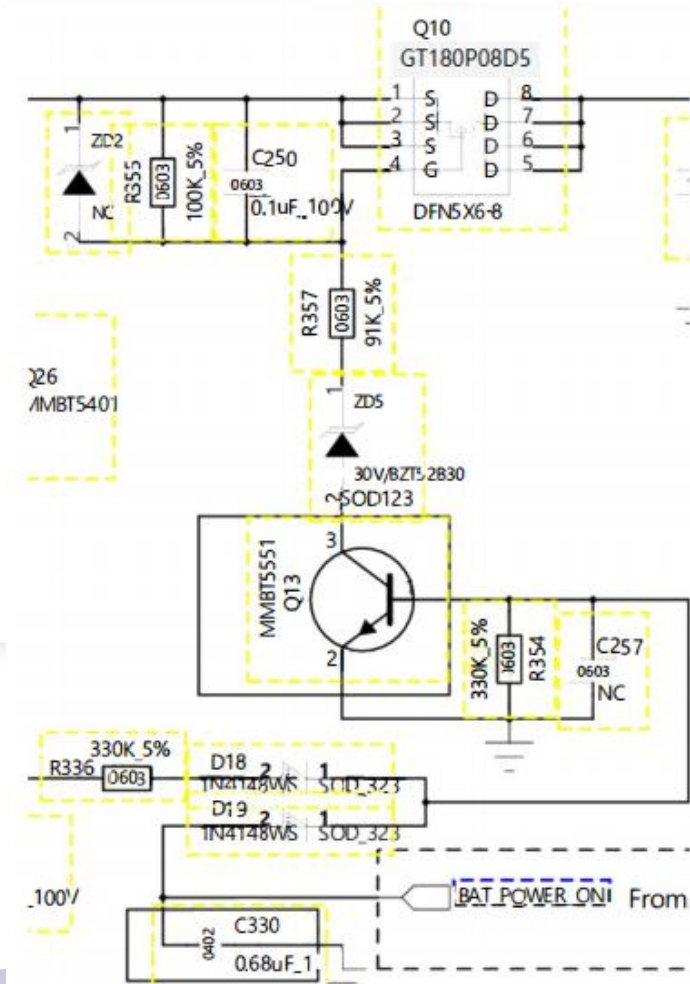


Tool (motor)

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Recommended Products

- G07P04S/K
- G75P04K/S/F
- G75P04D5/T
- 45P40
- 25P06
- G230P06K/S/F/D5/T
- G65P06K/D5/T/F
- G080P06M/T
- GT065P06D5T
- GT180P08D5
- GT240P10M
- GT250P10M/T
- GT400P10K/M/T
- GT500P10K
- GT750P10D5/K/M
- G2K8P15K/S
- G1K6P15K
- G900P15K/M/D5/T

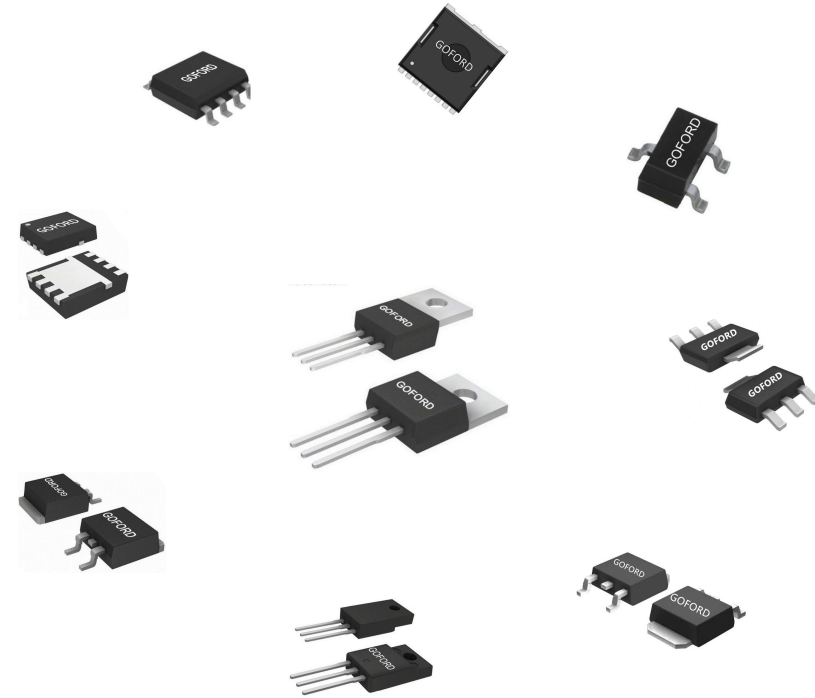


P-channel MOSFETs Summary

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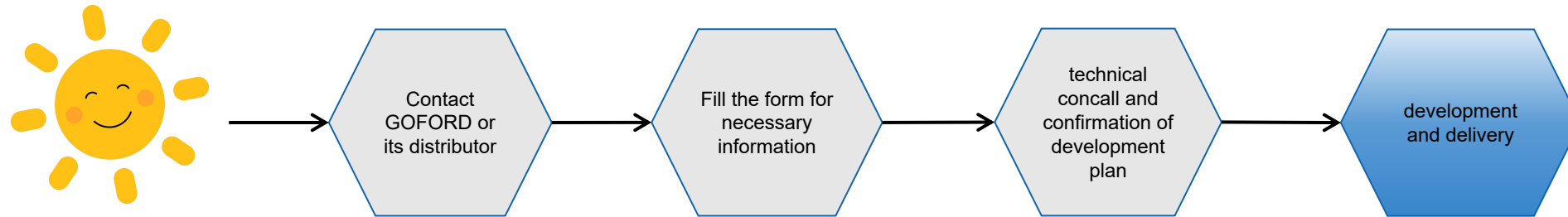
Features and benefits

- 🌐 Vds range P -250V to -12V;
- 🌐 Fast switching;
- 🌐 Avalanche ruggedness;
- 🌐 Simplified design;
- 🌐 Energy efficiency;
- 🌐 ESD protected products available;
- 🌐 Various packages;
- 🌐 Tailor-made available



Collaborated Development

GOFORD



Goford is very much willing to work with customer to maximize the benefit of customer. Please feel free to contact us!

Package

GOFORD

»» TOLT



»» TOLL



»» SOP-8



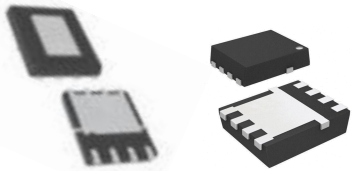
»» TO-252



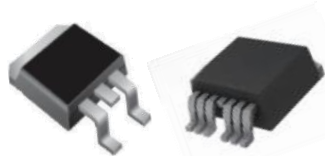
»» TO-252-4



»» DFN5*6 DFN3*3



»» TO-263 TO-263-6



»» TO-220 TO-220F



»» DFN8*8



»» TO-247-4

