

Power MOSFETs for Industrial and Consumer

P-channel Power MOSFETs -12V to -100V

Selection guide 2025

Contents

1. P-channel Power MOSFETs Lineup

1-1. [Single P-channel \(\$V_{DSS}=-12V\$ to \$-100V\$ \)](#)

1-2. [Dual Pch+Pch \(\$V_{DSS}=-12V\$ to \$-100V\$ \)](#)

1-3. [Dual Nch+Pch \(\$V_{DSS}=-20V\$ to \$-100V\$ \)](#)

2. P-channel MOSFET applications

2-1. [Motor drive: DC12V-48V Industrial](#)

2-2. [Motor drive: 3-phase AC100V-240V AC servo](#)

2-3. [AGV \(Automatic guided vehicle\)](#)

2-4. [Industrial AC/DC converter](#)

2-5. [Industrial battery management system \(Battery pack\)](#)

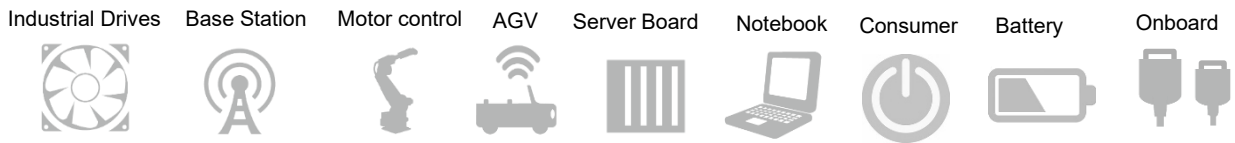
2-6. [Base Station Remote Radio Head \(RRH\)](#)

2-7. [Server Board](#)

The main advantage of a P-channel device is the reduction of design complexity in medium and low power applications.

ROHM offers a large range of P-channel power MOSFET voltages. Explore our product offers below.

P-channel MOSFET Application areas









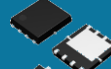
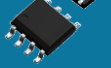



1. P-channel Power MOSFETs Lineup






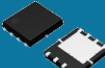
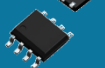

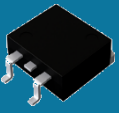

1-1. [Single P-channel \(V_{DSS}=-12V to -100V\)](#)

Pin	7pin	8pin	3pin	6pin	3pin	6pin	8pin	8pin
Size(mm)	1.6x1.6x0.55	2.0x2.0x0.6	2.0x2.1x0.77	2.0x2.1x0.77	2.9x2.8x0.85	2.9x2.8x0.85	3.0x2.8x0.8	3.3x3.3x0.8
Package	HEML1616LZ	HUML2020L8	TUMT3	TUMT6	TSMT3	TSMT6	TSMT8	HSMT8
V _{DSS}								
-12V			RAF040P01 -4A,30mΩ -1.5V drive	RAL035P01 -3.5A,42mΩ -1.5V drive	RQ5A040ZP -4A,30mΩ -1.5V drive	RQ6A050ZP -5A,26mΩ -1.5V drive	RQ1A070AP -7A,14mΩ -1.5V drive	
			RZF030P01 -3A,39mΩ -1.5V drive	RAL025P01 -2.5A,62mΩ -1.5V drive	RQ5A030AP -3A,62mΩ -1.5V drive	RQ6A045AP -4.5A,30mΩ -1.5V drive	RQ1A060ZP -6A,23mΩ -1.5V drive	
			RZF020P01 -2A,105mΩ -1.5V drive		RQ5A025ZP -2.5A,61mΩ -1.5V drive	RQ6A045ZP -4.5A,35mΩ -1.5V drive		
			RZF013P01 -1.3A,260mΩ -1.5V drive		RQ5A020ZP -2A,105mΩ -1.5V drive			
-20V	RW4C045BC -4.5A,56mΩ -1.8V drive	RF4C100BC -10A,15.6mΩ -1.8V drive		RF6C055BC -5.5A,25.8mΩ -1.8V drive	RQ5C060BC -6A,21.1mΩ -1.8V drive	RQ6C065BC -6.5A,21mΩ -1.8V drive		RQ3C150BC -37A*,6.7mΩ -1.8V drive
		RF4C050AP -10A,26mΩ -1.5V drive			RQ5C035BC -3.5A,59mΩ -1.8V drive	RQ6C050BC -5A,36mΩ -1.8V drive		
					RQ5C030TP -3A,75mΩ -2.5V drive			
					RQ5C025TP -2.5A,95mΩ -2.5V drive			
					RQ5C020TP -2A,135mΩ -2.5V drive			

I_D(A), R_{DS(on)} max at V_{GS}=-4.5V. Lineup products, Spec subject to change. Note) *Tc=25°C






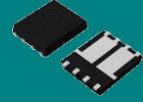
Pin	7pin / 8pin	3pin	6pin	8pin	8pin	8pin	3pin
Size(mm)	1) 1.6x1.6x0.55	1) 2.0x2.1x0.77	1) 2.0x2.1x0.77	3.0x2.8x0.8	3.3x3.3x0.8	1) 5.0x6.0x1.0	6.6x10.0x2.3
Package	HEML1616LZ	TUMT3	TUMT6	TSMT8	HSMT8	HSOP8	TO-252
	2) 2.0x2.0x0.6	2) 2.9x2.8x0.85	2) 2.9x2.8x0.85			2) 5.0x6.0x1.75	(DPAK)
	HUML2020L8	TSMT3	TSMT6			SOP8	
V_{DSS}	1)  2) 	1)  2) 	1)  2) 			1)  2) 	
-30V	1) RW4E045AT -4.5A,48mΩ	1) RRF015P03 -1.5A,160mΩ	1) RRL035P03 -3.5A,50mΩ	RQ7E100AT -10A,11.2mΩ	RQ3E120AT -39A*,8mΩ	1) RS1E260AT -80A*,3.1mΩ	
	2) RF4E075AT -7.5A,21.7mΩ	2) RQ5E050AT -5A,26mΩ	2) RQ6E060AT -6A,26.4mΩ	RQ1E070RP -7A,17mΩ	RQ3E100AT -31A*,11.4mΩ	1) RS1E220AT -76A*,4.1mΩ	
		2) RQ5E040RP -4A,45mΩ	2) RQ6E050AT -5A,27mΩ	RQ7E055AT -5.5A,24.5mΩ	RQ3E075AT -18A*,23mΩ	2) RS3E180AT -18A,5.4mΩ	
		2) RQ5E035AT -3.5A,50mΩ	2) RQ6E045RP -4.5A,35mΩ	RQ1E050RP -5A,31mΩ		2) RRH140P03 -14A,7mΩ	
		2) RQ5E030RP -3A,75mΩ	2) RQ6E035AT -3.5A,50mΩ			2) RS3E130AT -13A,8.5mΩ	
		2) RQ5E025AT -2.5A,91mΩ	2) RQ6E035SP -3.5A,65mΩ			2) RRH100P03 -10A,12.6mΩ	
		2) RQ5E025SP -2.5A,98mΩ	2) RQ6E030SP -3A,80mΩ			2) RRH090P03 -9A,15.4mΩ	
		2) RQ5E020SP -2A,120mΩ	2) RQ6E030AT -3A,91mΩ			2) RS3E075AT -7.5A,23.5mΩ	
		2) RQ5E015RP -1.5A,160mΩ	2) RRQ020P03 -2A,160mΩ			2) RRH050P03 -5A,50mΩ	
						2) RRH040P03 -4A,75mΩ	
-40V	2) RF4G060AT -6A,40mΩ		2) RQ6G050AT -5A,40mΩ	RQ7G080AT -8A,18.2mΩ	RQ3G110AT -35A*,12.4mΩ	1) RS1G201AT -78A*,5.2mΩ	RD3G07BAT -70A*,7.1mΩ
						2) RS3G160AT -16A,6.2mΩ	RD3G03BAT -35A*,19.1mΩ
							RD3G01BAT -15A*,39mΩ
-45V		1) RSF010P05 -1A,460mΩ				2) RSH070P05 -7A,27mΩ	RD3H160SP -16A,50mΩ
		2) RQ5H020SP -2A,190mΩ					RD3H080SP -8A,91mΩ
							RD3H045SP -4.5A,155mΩ

$I_D(A)$, $R_{DS(on)}$ max at $V_{GS}=-10V$. Lineup products, Spec subject to change. Note) *Tc=25°C

Pin	8pin	3pin	6pin	8pin	8pin	3pin	3pin	3pin
Size(mm)	2.0x2.0x0.6	2.9x2.8x0.85	2.9x2.8x0.85	1) 3.0x2.8x0.8	1) 5.0x6.0x1.0	6.6x10.0x2.3	10.1x13.1x4.5	10.16x29.07x4.44
Package	HUML2020L8 (DFN2020-8S)	TSMT3 (SOT-346T)	TSMT6 (SOT-457T)	TSMT8 2) 3.3x3.3x0.8 HSMT8	HSOP8 2) 5.0x6.0x1.75 SOP8	TO-252 (DPAK)	TO-263S (D2PAK)	TO-220AB
V_{DSS}				1)  2) 	1)  2) 			
-60V	RF4L040AT -4A,89mΩ	RQ5L030AT -3.0A,99mΩ	RQ6L035AT -3.5A,78mΩ	1) RQ7L050AT -5A,39mΩ	1) RS1L151AT -56A*,11.3mΩ	RD3L07BAT -70A*,12.7mΩ		
		RQ5L015SP -1.5A,280mΩ	RQ6L020SP -2A,210mΩ	2) RQ3L070AT -25A*,28mΩ	2) RS3L110AT -11A,12.8mΩ	RD3L03BAT -35A*,41mΩ		
						RD3L140SP -14A,84mΩ		
						RD3L01BAT -10A*,84mΩ		
-80V				2) RQ3N060AT -18A*,52mΩ	1) RS1N110AT -43A*,21mΩ	RD3N06BAT -60A*,26mΩ		
				2) RQ3N040AT -10A*,126mΩ		RD3N03BAT -30A*,56mΩ		
				2) RQ3N025AT -7A*,240mΩ		RD3N01BAT -10A*,141mΩ		
						RD3N045AT -4.5A*,650mΩ		
-100V	RF4P025AT -2.5A,260mΩ		RQ6P020AT -2A,220mΩ	1) RQ7P035AT -3.5A,111mΩ	1) RS1P090AT -33A*,34mΩ	RD3P05BAT -50A*,41mΩ	RSJ250P10 -25A*,63mΩ	RX3P12BAT -120A*,12.3mΩ
			RQ6P015SP -1.5A,470mΩ	2) RQ3P045AT -14.5A*,86mΩ	2) RS3P070AT -7A,36mΩ	RD3P02BAT -20A*,116mΩ	RSJ151P10 -15A*,120mΩ	
						RD3P130SP -13A,200mΩ		
						RD3P01BAT -10A*,240mΩ		

$I_D(A)$, $R_{DS(on)}$ max at $V_{GS}=-10V$. Lineup products, Spec subject to change. Note) *Tc=25°C









1-2. [Dual Pch+Pch](#)

Pin	8pin	6pin	6pin	8pin	8pin	8pin
Size(mm)	2.0x2.0x0.6	2.0x2.1x0.77	2.9x2.8x0.85	3.0x2.8x0.8	5.0x6.0x1.75	5.0x6.0x1.0
Package	HUML2020L8 (DFN2020-8D)	TUMT6 (SOT-363T)	TSMT6 (SOT-457T)	TSMT8	SOP8	HSOP8
V_{DSS}						
-12V		US6J12 -2A,105mΩ -1.5V drive	QS6J11 -2A,105mΩ -1.5V drive	QS8J13 -5.5A,22mΩ -1.5V drive		
		US6J11 -1.3A,260mΩ -1.5V drive		QS8J2 -4A,36mΩ -1.5V drive		
-20V	UT6JA3 -5A,59mΩ -1.8V drive		QS6J1 -1.5A,215mΩ -2.5V drive	QH8JA1 -5A,38mΩ -1.8V drive		
	UT6J3 -3A,85mΩ -1.5V drive					
-30V	UT6JA2 -4A,70mΩ -4.5V drive			QS8J5 -5A,39mΩ -4.0V drive	SH8J66 -9A,18.5mΩ -4.0V drive	
				QS8J4 -4A,56mΩ -4.0V drive	SH8J65 -7A,29mΩ -4.0V drive	
					SH8J62 -4.5A,56mΩ -4.0V drive	
-40V	UT6JB5 -3.5A,122mΩ -4.5V drive			QH8JB5 -5A,41mΩ -4.5V drive	SH8JB5 -8.5A,15.3mΩ -4.5V drive	
-60V	UT6JC5 -2.5A,280mΩ -4.5V drive			QH8JC5 -3.5A,91mΩ -4.5V drive	SH8JC5 -7.5A,32mΩ -4.5V drive	
					SH8J31 -4.5A,70mΩ -4.0V drive	
-100V	UT6JE5 -1A,840mΩ -4.5V drive			QH8JE5 -2A,270mΩ -4.5V drive	SH8JE5 -4.5A,91mΩ -4.5V drive	HP8JE5 -12.5A*,127mΩ -4.5V drive

I_D (A), $R_{DS(on)}$ max at $V_{GS}=-4.5V$ ($V_{DSS}=-12V$ to $-20V$), $V_{GS}=-10V$ ($V_{DSS}=-30V$ to $-100V$). Lineup products, Spec subject to change.

Note) * $T_c=25^\circ C$

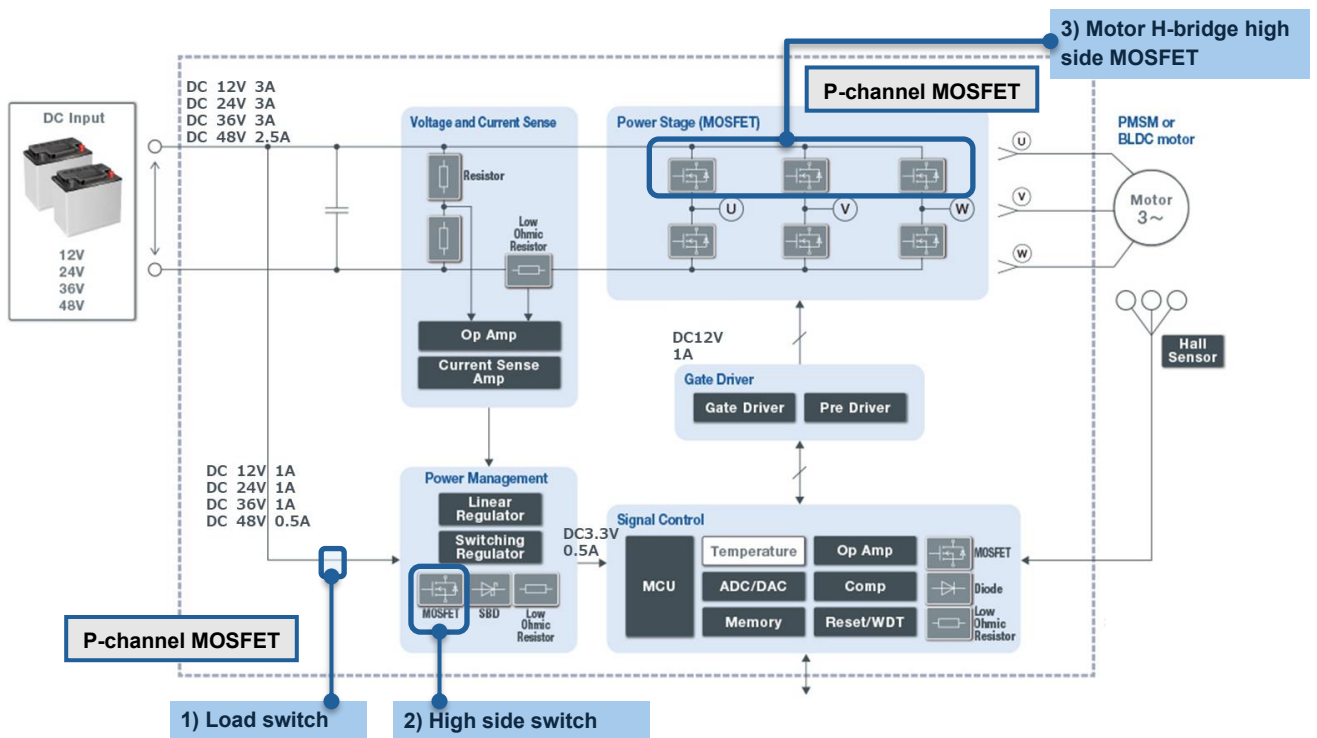
1-3. [Dual Nch+Pch](#)

Pin	8pin	6pin	6pin	8pin	8pin	9pin	8pin	8pin
Size(mm)	2.0x2.0x0.6	2.0x2.1x0.77	2.9x2.8x0.85	3.0x2.8x0.8	3.3x3.35x0.75	3.3x3.3x0.75	5.0x6.0x1.75	5.0x6.0x1.0
Package	HUML2020L8 (DFN2020-8D)	TUMT6 (SOT-363T)	TSMT6 (SOT457T)	TSMT8	HSMT8	HSML3333L9 (DFN3333-9DC)	SOP8	HSOP8
V_{DSS}								
20V/-20V 20V/-12V	UT6MA3 5.5A/-5A, 42mΩ/59mΩ**	US6M11 1.5A/-1.3A, 180mΩ/260mΩ**						
30V/-30V 30V/-20V	UT6MA2 4A/-4A, 46mΩ/70mΩ	US6M2 1.5A/-1A, 240mΩ/390mΩ**	QS6M4 1.5A/-1.5A, 230mΩ/215mΩ**	QH8MA4 9A/-8A, 16mΩ/28.6mΩ		HS8MA2 7A/-5.5A, 35mΩ/80mΩ	SH8MA4 9A/-8.5A, 21.4mΩ/29.6mΩ	HP8MA2 18A/-15A, 9.6mΩ/17.9mΩ
		US6M1 1.4A/-1A, 240mΩ/390mΩ**		QH8MA3 7A/-5.5A, 29mΩ/48mΩ			SH8MA3 7A/-6A, 28mΩ/50mΩ	
				QH8MA2 4.5A/-3A, 35mΩ/80mΩ			SH8MA2 4.5A/-4.5A, 80mΩ/82mΩ	
40V/-40V	UT6MB5 5A/-3.5A, 48mΩ/122mΩ			QH8MB5 4.5A/-5A, 44mΩ/41mΩ	HT8MB5 12A/-15A*, 47mΩ/44mΩ		SH8MB5 8.5A/-8.5A, 19.4mΩ/16.8mΩ	HP8MB5 16.5A/-18A*, 46mΩ/44mΩ
							SH8MB4 4.5A/-5.5A, 55mΩ/46mΩ	
45V/-45V							SH8M24 6A/-6A, 46mΩ/63mΩ	
60V/-60V	UT6MC5 3.5A/-2.5A, 95mΩ/280mΩ			QH8MC5 3A/-3.5A, 90mΩ/91mΩ	HT8MC5 10A/-11.5A*, 90mΩ/97mΩ		SH8MC5 6.5A/-7A, 32mΩ/33mΩ	HP8M31 8.5A/-8.5A, 65mΩ/70mΩ
				QS8M31 3A/-2A, 112mΩ/210mΩ			SH8MC4 3.5A/-4A, 95mΩ/96mΩ	HP8MC5 12A/-12A*, 90mΩ/96mΩ
							SH8M31 4.5A/-4.5A, 65mΩ/70mΩ	
80V/-80V					HT8MD5H 9A/-8.5A*, 112mΩ/165mΩ		SH8MD5H 3.5A/-3A, 116mΩ/167mΩ	
							SH8M41 3.4A/-2.6A, 130mΩ/240mΩ	
100V/-100V	UT6ME5 2A/-1A, 207mΩ/840mΩ			QH8ME5 2A/-2A, 202mΩ/270mΩ			SH8ME5 4.5A/-4.5A, 58mΩ/91mΩ	HP8ME5 8.5A/-8A*, 193mΩ/273mΩ
				QS8M51 2A/-1.5A, 325mΩ/470mΩ				HP8M51 4.5A/-4.5A, 170mΩ/290mΩ

$I_D(A)$, $R_{DS(on)}$ max at $V_{GS}=10V$ (**: $V_{GS}=4.5V$). Lineup products, Spec subject to change. Note) * $T_c=25^\circ C$

2. P-channel MOSFET applications

2-1. Motor drive: DC12V-48V Industrial



Recommended P-channel power MOSFETs

1) Load switch

Circuit example	Part number	V _{DSS}	I _D	R _{DS(on)} max. V _{GS} =-10V	Package	Size(mm)	
	RW4E045AT	-30V	-4.5A	48mΩ	HEML1616L7 (DFN1616-7T)	1.6x1.6x0.55	
	RQ6G050AT	-40V	-5A	40mΩ	TSMT6 (SOT-457T)	2.9x2.8x0.85	

2) High side switch

	RS1G201AT	-40V	-78A*	5.2mΩ	HSOP8	5.0x6.0x1.0	
	RS3P070AT	-100V	-7A	36mΩ	SOP8	5.0x6.0x1.75	

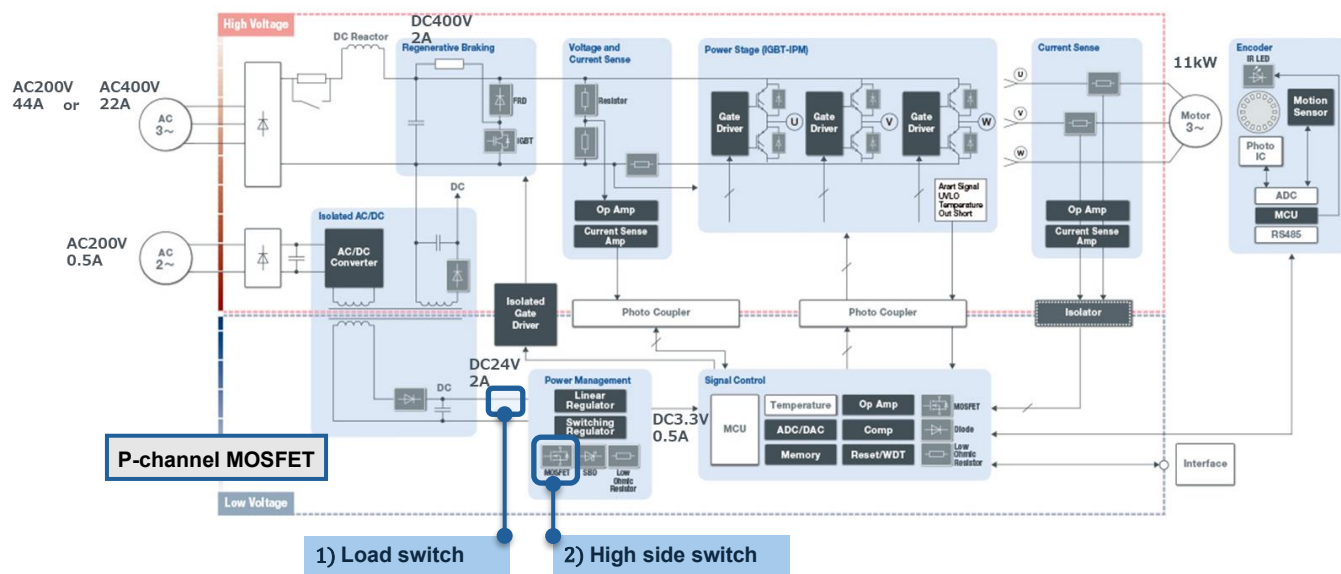
3) Motor H-bridge high side MOSFET

	RQ7G080AT	-40V	-8A	18.2mΩ	TSMT8	3.0x2.8x0.8	
	RS3L110AT	-60V	-11A	12.8mΩ	SOP8	5.0x6.0x1.75	

*T_c=25°C

[Please click here for other P-channel MOSFETs lineup pages.](#)

2-2. [Motor drive: 3-phase AC100V-240V AC servo](#)



Recommended P-channel power MOSFETs

1) Load switch

Circuit example	Part number	V _{DSS}	I _D	R _{DS(on)} max. V _{GS} =-10V	Package	Size(mm)	
	RQ6E060AT	-30V	-6A	26.4mΩ	TSMT6 (SOT-457T)	2.9x2.8x0.85	
	RQ7E100AT	-30V	-10A	11.2mΩ	TSMT8	3.0x2.8x0.8	
	RQ6G050AT	-40V	-5A	40mΩ	TSMT6 (SOT-457T)	2.9x2.8x0.85	
	RQ7G080AT	-40V	-8A	18.2mΩ	TSMT8	3.0x2.8x0.8	

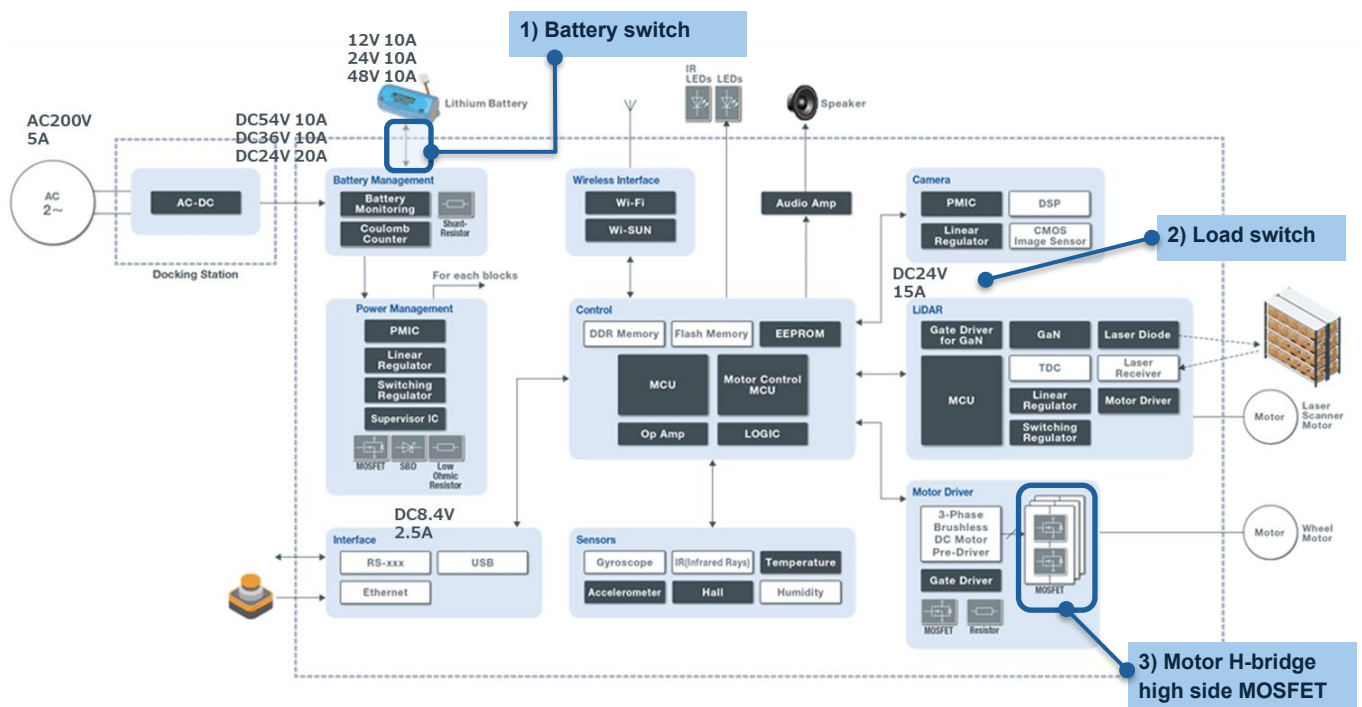
2) High side switch

	RS3E180AT	-30V	-18A	5.4mΩ	SOP8	5.0x6.0x1.75	
	RS1G201AT	-40V	-78A*	5.2mΩ	HSOP8	5.0x6.0x1.0	
	RS3L110AT	-60V	-11A	12.8mΩ	SOP8	5.0x6.0x1.75	

*T_c=25°C

[Please click here for other P-channel MOSFETs lineup pages.](#)

2-3. [AGV \(Automatic guided vehicle\)](#)



Recommended P-channel power MOSFETs

1) Battery switch (P-channel in case)

Circuit example	Part number	V _{DSS}	I _D	R _{DS(on)} max. V _{GS} =-10V	Package	Size(mm)	
	RQ7L050AT	-60V	-5A	39mΩ	TSMT8	3.0x2.8x0.8	
	RS3P070AT	-100V	-7A	36mΩ	SOP8	5.0x6.0x1.75	

2) Load switch

	RQ7G080AT	-40V	-8A	18.2mΩ	TSMT8	3.0x2.8x0.8	
	RS1N110AT	-80V	-43A*	21mΩ	HSOP8	5.0x6.0x1.0	

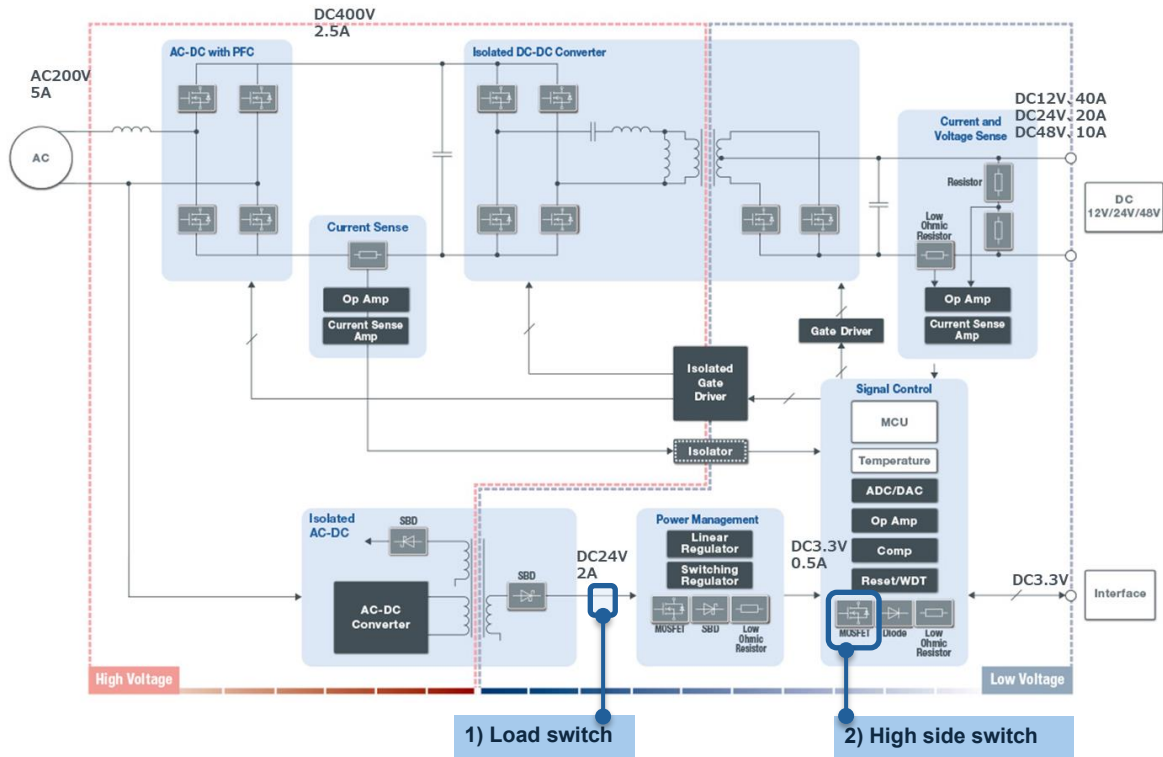
3) Motor H-bridge high side MOSFET

	RD3L07BAT	-60V	-70A*	12.7mΩ	TO-252 (DPAK)	6.6x10.0x2.3	
	RD3P05BAT	-100V	-50A*	41mΩ	TO-252 (DPAK)	6.6x10.0x2.3	

*T_c=25°C

[Please click here for other P-channel MOSFETs lineup pages.](#)

2-4. [Industrial AC/DC converter](#)



Recommended P-channel power MOSFETs

1) Load switch

Circuit example	Part number	V _{DSS}	I _D	R _{DS(on)} max. V _{GS} =-10V	Package	Size(mm)	
	RQ6E060AT	-30V	-6A	26.4mΩ	TSMT6 (SOT-457T)	2.9x2.8x0.85	
	RQ7G080AT	-40V	-8A	18.2mΩ	TSMT8	3.0x2.8x0.8	
	RQ6G050AT	-40V	-5A	40mΩ	TSMT6 (SOT-457T)	2.9x2.8x0.85	

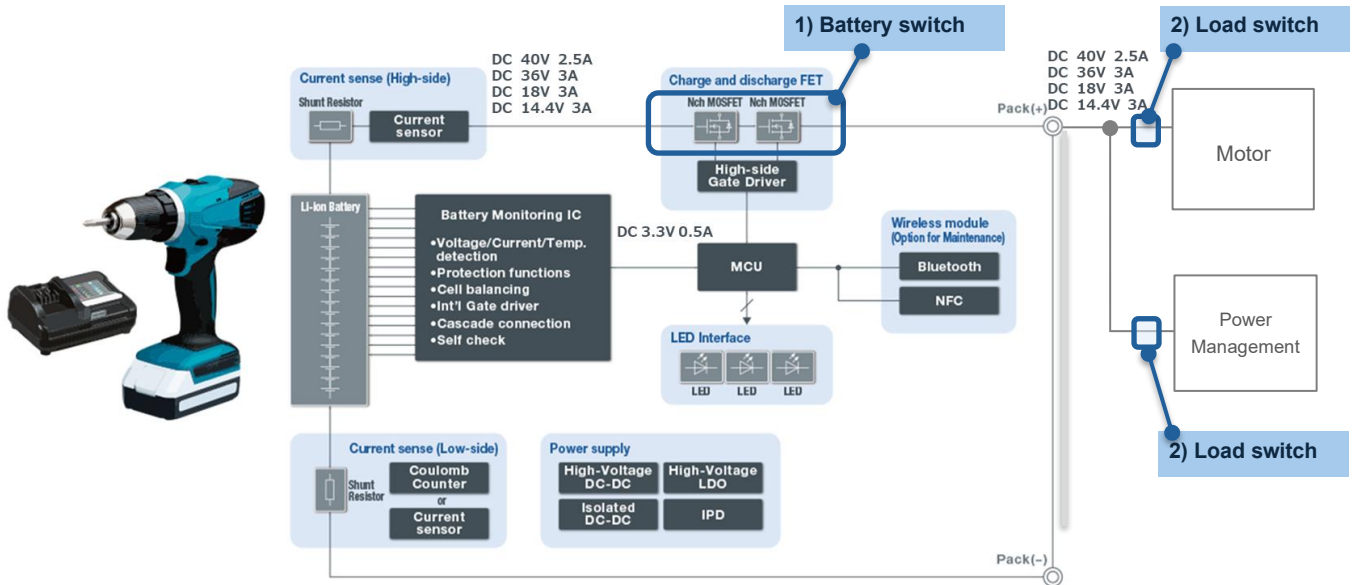
2) High side switch

	RQ7L050AT	-60V	-5A	39mΩ	TSMT8	3.0x2.8x0.8	
	RS1N110AT	-80V	-43A*	21mΩ	HSOP8	5.0x6.0x1.0	
	RQ3P045AT	-100V	-14.5A*	86mΩ	HSMT8	3.3x3.3x0.8	

*T_c=25°C

[Please click here for other P-channel MOSFETs lineup pages.](#)

2-5. [Industrial battery management system \(Battery pack\)](#)



Recommended P-channel power MOSFETs

1) Battery switch (P-channel in case)

Circuit example	Part number	V _{DSS}	I _D	R _{DS(on)} max. V _{GS} =-10V	Package	Size(mm)	
	RQ7E100AT	-30V	-10A	11.2mΩ	TSMT8	3.0x2.8x0.8	
	RQ7G080AT	-40V	-8A	18.2mΩ	TSMT8	3.0x2.8x0.8	
	RS1L151AT	-60V	-56A*	11.3mΩ	HSOP8	5.0x6.0x1.0	
	RS3P070AT	-100V	-7A	36mΩ	SOP8	5.0x6.0x1.75	

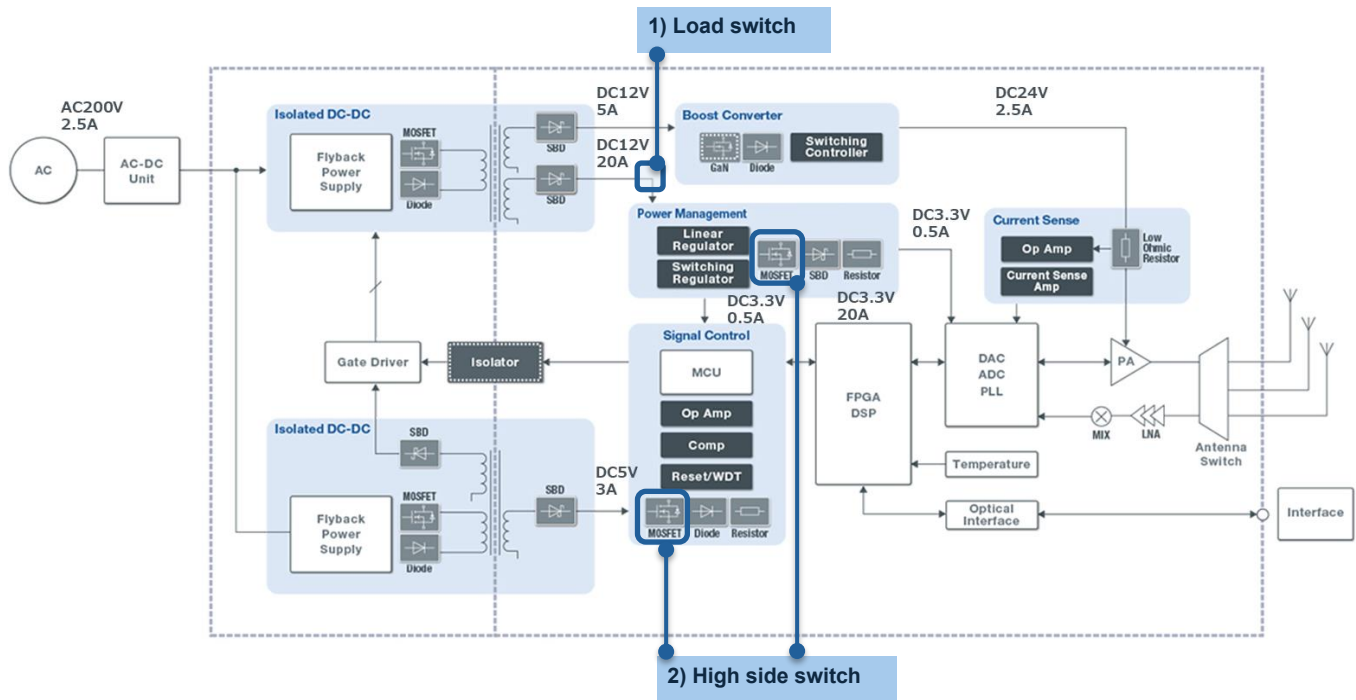
2) Load switch

	RW4E045AT	-30V	-4.5A	48mΩ	HEML1616L7 (DFN1616-7T)	1.6x1.6x0.55	
	RQ6G050AT	-40V	-5A	40mΩ	TSMT6 (SOT-457T)	2.9x2.8x0.85	
	RQ7L050AT	-60V	-5A	39mΩ	TSMT8	3.0x2.8x0.8	

*T_c=25°C

[Please click here for other P-channel MOSFETs lineup pages.](#)

2-6. [Base Station Remote Radio Head \(RRH\)](#)



Recommended P-channel power MOSFETs

1) Load switch

Circuit example	Part number	V _{DSS}	I _D	R _{DS(on)} max. V _{GS} =-10V	Package	Size(mm)	
	RQ7E100AT	-30V	-10A	11.2mΩ	TSMT8	3.0x2.8x0.8	
	RS3G160AT	-40V	-16A	6.2mΩ	SOP8	5.0x6.0x1.75	
	RD3G07BAT	-40V	-70A*	7.1mΩ	TO-252 (DPAK)	6.6x10.0x2.3	

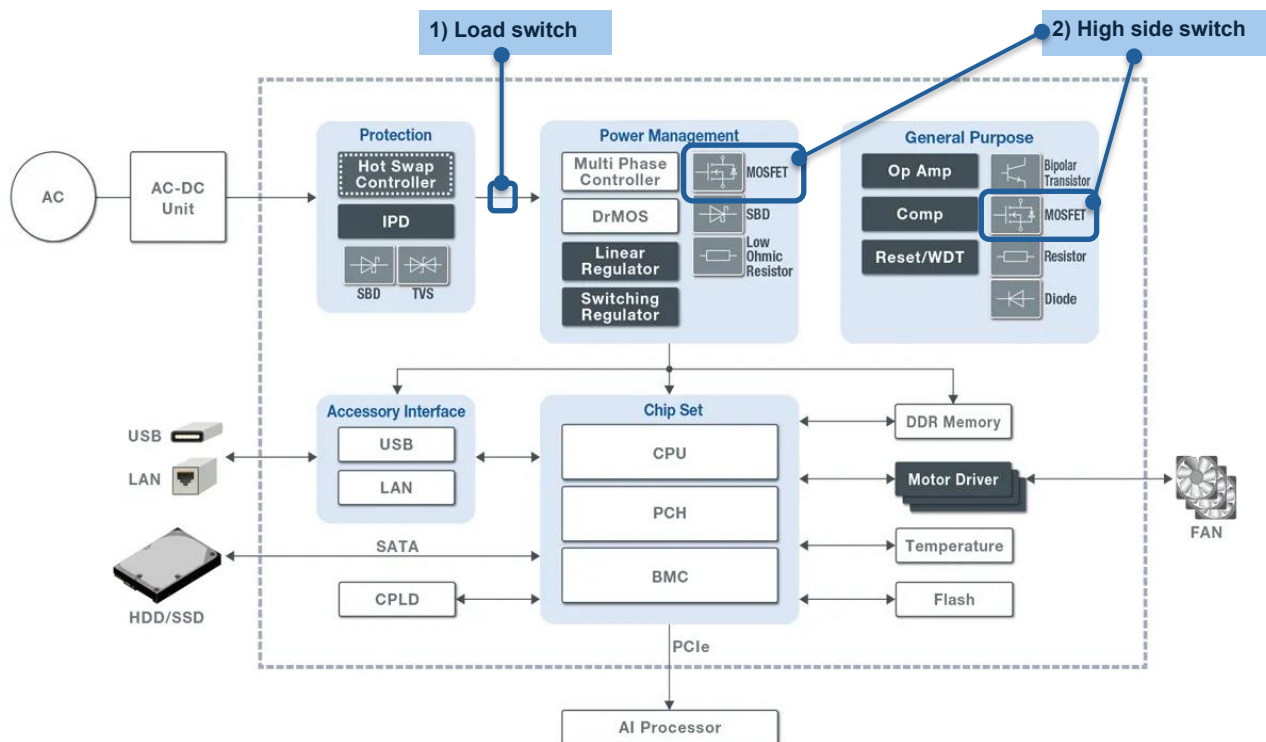
2) High side switch

	RS3E180AT	-30V	-18A	5.4mΩ	SOP8	5.0x6.0x1.75	
	RQ6G050AT	-40V	-5A	40mΩ	TSMT6 (SOT-457T)	2.9x2.8x0.85	
	RS3L110AT	-60V	-11A	12.8mΩ	SOP8	5.0x6.0x1.75	

*T_c=25°C

[Please click here for other P-channel MOSFETs lineup pages.](#)

2-7. [Server Board](#)



Recommended P-channel power MOSFETs

1) Load switch

Circuit example	Part number	V _{DSS}	I _D	R _{DS(on)} max. V _{GS} =-10V	Package	Size(mm)	
	RQ7E100AT	-30V	-10A	11.2mΩ	TSMT8	3.0x2.8x0.8	
	RS3E180AT	-30V	-18A	5.4mΩ	SOP8	5.0x6.0x1.75	
	RQ7G080AT	-40V	-8A	18.2mΩ	TSMT8	3.0x2.8x0.8	
	RS3G160AT	-40V	-16A	6.2mΩ	SOP8	5.0x6.0x1.75	

2) High side switch

	RQ6E060AT	-30V	-6A	26.4mΩ	TSMT6 (SOT-457T)	2.9x2.8x0.85	
	RS3G160AT	-40V	-16A	6.2mΩ	SOP8	5.0x6.0x1.75	
	RQ7L050AT	-60V	-5A	39mΩ	TSMT8	3.0x2.8x0.8	

[Please click here for other P-channel MOSFETs lineup pages.](#)

Notice

- 1) The information contained in this document is intended to introduce ROHM Group (hereafter referred to as ROHM) products. When using ROHM products, please verify the latest specifications or datasheets before use.
- 2) ROHM products are designed and manufactured for use in general electronic equipment and applications (such as Audio Visual equipment, Office Automation equipment, telecommunication equipment, home appliances, amusement devices, etc.) or specified in the datasheets. Therefore, please contact the ROHM sales representative before using ROHM products in equipment or devices requiring extremely high reliability and whose failure or malfunction may cause danger or injury to human life or body or other serious damage (such as medical equipment, transportation, traffic, aircraft, spacecraft, nuclear power controllers, fuel control, automotive equipment including car accessories, etc. hereafter referred to as Specific Applications). Unless otherwise agreed in writing by ROHM in advance, ROHM shall not be in any way responsible or liable for any damages, expenses, or losses incurred by you or third parties arising from the use of ROHM Products for Specific Applications.
- 3) Electronic components, including semiconductors, can fail or malfunction at a certain rate. Please be sure to implement, at your own responsibilities, adequate safety measures including but not limited to fail-safe design against physical injury, and damage to any property, which a failure or malfunction of products may cause.
- 4) The information contained in this document, including application circuit examples and their constants, is intended to explain the standard operation and usage of ROHM products, and is not intended to guarantee, either explicitly or implicitly, the operation of the product in the actual equipment it will be used. As a result, you are solely responsible for it, and you must exercise your own independent verification and judgment in the use of such information contained in this document. ROHM shall not be in any way responsible or liable for any damages, expenses, or losses incurred by you or third parties arising from the use of such information.
- 5) When exporting ROHM products or technologies described in this document to other countries, you must abide by the procedures and provisions stipulated in all applicable export laws and regulations, such as the Foreign Exchange and Foreign Trade Act and the US Export Administration Regulations, and follow the necessary procedures in accordance with these provisions.
- 6) The technical information and data described in this document, including typical application circuits, are examples only and are not intended to guarantee to be free from infringement of third parties intellectual property or other rights. ROHM does not grant any license, express or implied, to implement, use, or exploit any intellectual property or other rights owned or controlled by ROHM or any third parties with respect to the information contained herein.
- 7) No part of this document may be reprinted or reproduced in any form by any means without the prior written consent of ROHM.
- 8) All information contained in this document is current as of the date of publication and subject to change without notice. Before purchasing or using ROHM products, please confirm the latest information with the ROHM sales representative.
- 9) ROHM does not warrant that the information contained herein is error-free. ROHM shall not be in any way responsible or liable for any damages, expenses, or losses incurred by you or third parties resulting from errors contained in this document.



Thank you for your accessing to ROHM product informations.
More detail product informations and catalogs are available, please contact us.

ROHM Customer Support System

<https://www.rohm.com/contactus>