



Large-signal Power MOSFET for 60V/100V Motor Drivers

The Power MOSFET new series products are large-signal, medium-voltage Power MOSFETs optimized for DC/DC converters and motor drives with a DC input of 12V to 48V. Taking the form of a full-mold TO-220 (TO-220ML), the new MOSFET adopts a trench structure to achieve an increase in performance of 50% or more compared with existing products.

Features

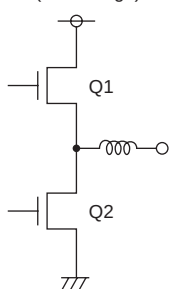
- Avalanche resistance guaranteed.
- Lower ON-resistance by adopting trench structure.
- 4V low-voltage drive.

Examples of application sets and sample application circuits

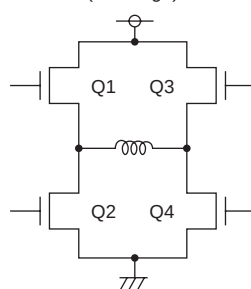
DC/DC converters for amusement use, electric bicycles, fan motors, general-purpose motor drives, etc.

< Sample motor drive circuits >

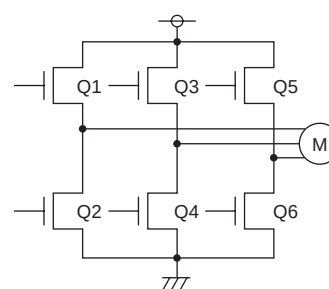
Single-phase motor
(Half-Bridge)



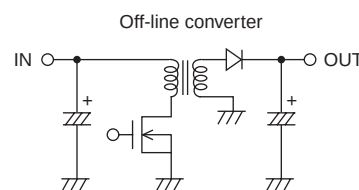
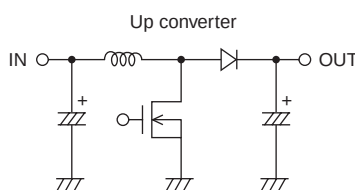
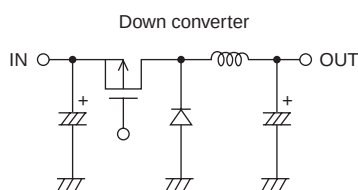
Single-phase motor
(H-Bridge)



3-phase motor



< Sample DC/DC converter circuits >



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Power MOSFET for 60V/100V

P-channel Series

New Products

60V TO-220ML

Type No.	Package	VDSS (V)	VGSS (V)	ID (A)	IDP (A)	PD Tc=25°C (W)	VGS(off) (V)	RDS(on) VGS=4V		RDS(on) VGS=10V	
								typ (mΩ)	max (mΩ)	typ (mΩ)	max (mΩ)
2SJ650	TO-220ML	60	±20	12	48	20	1.2 to 2.6	145	205	100	135
2SJ651	TO-220ML	60	±20	20	80	25	1.2 to 2.6	65	92	45	60
2SJ652	TO-220ML	60	±20	28	112	30	1.2 to 2.6	39	55.5	28.5	38
2SJ653	TO-220ML	60	±20	37	148	35	1.2 to 2.6	26	37	16	25

100V TO-220ML

Type No.	Package	VDSS (V)	VGSS (V)	ID (A)	IDP (A)	PD Tc=25°C (W)	VGS(off) (V)	RDS(on) VGS=4V		RDS(on) VGS=10V	
								typ (mΩ)	max (mΩ)	typ (mΩ)	max (mΩ)
2SJ654	TO-220ML	100	±20	8	32	20	1.2 to 2.6	320	450	240	315
2SJ655	TO-220ML	100	±20	12	48	25	1.2 to 2.6	136	190	100	136
2SJ656	TO-220ML	100	±20	18	72	30	1.2 to 2.6	74	104	58	75.5
2SJ657	TO-220ML	100	±20	25	100	35	1.2 to 2.6	49	69	39	52

60V Existing Products

Type No.	Package	VDSS (V)	VGSS (V)	ID (A)	IDP (A)	PD Tc=25°C (W)	VGS(off) (V)	RDS(on) VGS=4V		RDS(on) VGS=10V		Recommended replacement product
								typ (mΩ)	max (mΩ)	typ (mΩ)	max (mΩ)	
2SJ348	TO-220	60	±20	30	120	70	1 to 2	40	55	30	40	2SJ652
2SJ478	TO-220	60	±20	20	80	80	1 to 2	50	90	35	45	2SJ651
2SJ589LS	TO-220FI(LS)	60	±20	15	60	25	1 to 2.4	80	115	58	80	2SJ651
2SJ590LS	TO-220FI(LS)	60	±20	20	80	25	1 to 2.4	62	87	43	56	2SJ651
2SJ591LS	TO-220FI(LS)	60	±20	28	112	35	1 to 2.4	38	53	27	35	2SJ652
2SJ263	TO-220ML	60	±20	6	24	25	1 to 2	200	270	150	200	2SJ650
2SJ264	TO-220ML	60	±20	8	32	25	1 to 2	150	200	110	150	2SJ650
2SJ519	TO-220ML	60	±20	20	80	35	1 to 2	45	70	30	40	2SJ652

100V Existing Products

Type No.	Package	VDSS (V)	VGSS (V)	ID (A)	IDP (A)	PD Tc=25°C (W)	VGS(off) (V)	RDS(on) VGS=4V		RDS(on) VGS=10V		Recommended replacement product
								typ (mΩ)	max (mΩ)	typ (mΩ)	max (mΩ)	
2SJ272	TO-220ML	100	±15	4	16	25	1 to 2	400	550	300	400	2SJ654
2SJ273	TO-220ML	100	±20	6	24	25	1 to 2	300	400	220	300	2SJ654
2SJ274	TO-220ML	100	±15	12	48	30	1 to 2	160	220	120	160	2SJ655

Power MOSFET for 60V/100V

N-channel Series

New Products

60V TO-220ML

Type No.	Package	VDSS (V)	VGSS (V)	ID (A)	IDP (A)	PD Tc=25°C (W)	VGS(off) (V)	RDS(on) VGS=4V		RDS(on) VGS=10V	
								typ (mΩ)	max (mΩ)	typ (mΩ)	max (mΩ)
2SK3702	TO-220ML	60	±20	18	72	20	1.2 to 2.6	60	85	45	60
2SK3703	TO-220ML	60	±20	30	120	25	1.2 to 2.6	28	40	20	26
2SK3704	TO-220ML	60	±20	45	180	30	1.2 to 2.6	15	21	10.5	14
2SK3705	TO-220ML	60	±20	60	208	35	1.2 to 2.6	12	17	9	12.5

100V TO-220ML *Under development

Type No.	Package	VDSS (V)	VGSS (V)	ID (A)	IDP (A)	PD Tc=25°C (W)	VGS(off) (V)	RDS(on) VGS=4V		RDS(on) VGS=10V		Remarks
								typ (mΩ)	max (mΩ)	typ (mΩ)	max (mΩ)	
*2SK3706	TO-220ML	100	±20	12	48	20	1.2 to 2.6	130	180	100	130	Start of commercial production planned for October 2003
2SK3707	TO-220ML	100	±20	20	80	25	1.2 to 2.6	56	80	45	60	—
2SK3708	TO-220ML	100	±20	30	120	30	1.2 to 2.6	30	42	25	33	—
2SK3709	TO-220ML	100	±20	37	148	35	1.2 to 2.6	23	32	19	25	—

60V Existing Products

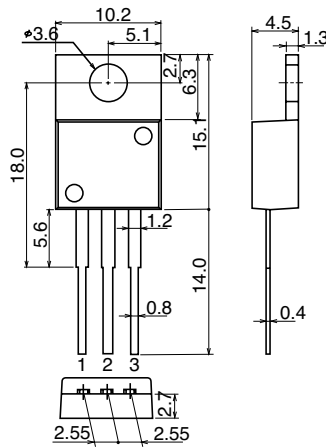
Type No.	Package	VDSS (V)	VGSS (V)	ID (A)	IDP (A)	PD Tc=25°C (W)	VGS(off) (V)	RDS(on) VGS=4V		RDS(on) VGS=10V		Recommended replacement product
								typ (mΩ)	max (mΩ)	typ (mΩ)	max (mΩ)	
2SK1416	TO-220	60	±20	15	60	40	1.5 to 2.5	—	—	60	80	2SK3702
2SK1417	TO-220	60	±20	25	100	60	1.5 to 2.5	—	—	35	45	2SK3703
2SK1418	TO-220	60	±20	40	160	70	1.5 to 2.5	—	—	20	26	2SK3703 / 2SK3704
2SK1419	TO-220ML	60	±20	15	60	25	1.5 to 2.5	—	—	60	80	2SK3702
2SK1420	TO-220ML	60	±20	25	100	30	1.5 to 2.5	—	—	35	45	2SK3703
2SK1421	TO-220ML	60	±20	40	160	40	1.5 to 2.5	—	—	20	26	2SK3703 / 2SK3704
2SK1895	TO-220ML	60	±20	12	48	25	1 to 2	80	110	60	80	2SK3702
2SK1896	TO-220ML	60	±20	15	60	25	1 to 2	70	95	50	70	2SK3702
2SK3413LS	TO-220FI(LS)	60	±20	25	100	25	1 to 2.4	35	49	25	33	2SK3702
2SK3414LS	TO-220FI(LS)	60	±20	30	120	25	1 to 2.4	26	36	20	26	2SK3703
2SK3415LS	TO-220FI(LS)	60	±20	40	160	35	1 to 2.4	17	24	13	17	2SK3704

100V Existing Products *Under development

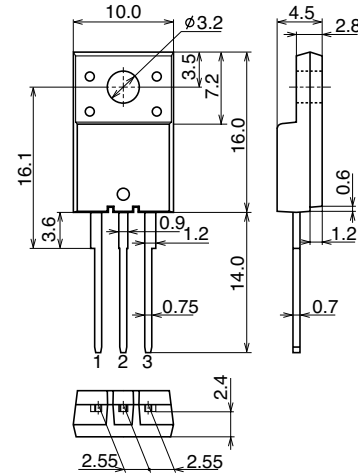
Type No.	Package	VDSS (V)	VGSS (V)	ID (A)	IDP (A)	PD Tc=25°C (W)	VGS(off) (V)	RDS(on) VGS=4V		RDS(on) VGS=10V		Recommended replacement product
								typ (mΩ)	max (mΩ)	typ (mΩ)	max (mΩ)	
2SK1904	TO-220ML	100	±15	10	40	25	1 to 2	160	220	120	160	*2SK3706
2SK1905	TO-220ML	100	±20	12	48	25	1 to 2	135	180	100	135	*2SK3706
2SK1906	TO-220ML	100	±15	20	80	30	1 to 2	80	110	60	80	2SK3707
2SK1427	TO-220	100	±20	10	40	40	1.5 to 2.5	—	—	120	160	*2SK3706
2SK1428	TO-220	100	±20	20	80	60	1.5 to 2.5	—	—	75	100	2SK3707
2SK1429	TO-220	100	±20	30	120	70	1.5 to 2.5	—	—	40	55	2SK3708
2SK1430	TO-220ML	100	±20	10	40	25	1.5 to 2.5	—	—	120	160	*2SK3706
2SK1431	TO-220ML	100	±20	15	60	30	1.5 to 2.5	—	—	75	100	2SK3707
2SK1432	TO-220ML	100	±20	25	100	40	1.5 to 2.5	—	—	40	55	2SK3707 / 2SK3708

Package Dimensions

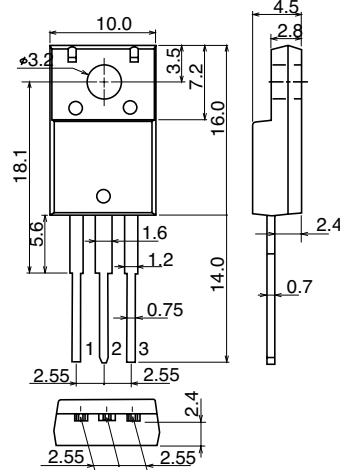
[TO-220]



[TO-220FI(LS)]



[TO-220ML]



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