JMY1852P

Product Preview

12V 12A P-Channel MOSFET

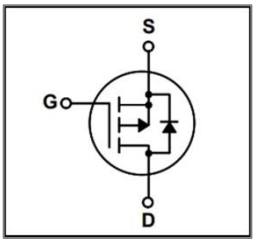
Features

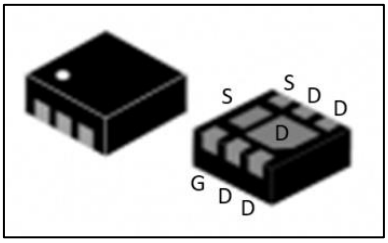
- Advanced trench technology
- Ultra-low on-resistance
- RoHS compliant

Product Summary	
V_{DS}	-12V
$R_{DS(ON)}$	9.5mΩ (Typ.)
	12.3mΩ (Max.)
I_D	-12A

Applications

- Motor controllers
- DC-to-DC convertors
- Battery-driven electronic products, electrical equipment and machines





Ordering Information

Part Number	Marking	Package	Packaging
JMY1852P	Y1852P	DFN2x2	Tape & Reel

Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Drain-to-Source Voltage	V_{DS}	-12	V
Gate-to-Source Voltage	V_{GS}	±12	
Continuous Drain Current, Package Limited (T_C = 25°C) (1)	I_D	-12	A
Continuous Drain Current, Silicon Limited (T_C = 25°C) (1)	I_D	-37	
Continuous Drain Current, Silicon Limited (T_C = 100°C) (1)	I_D	-23	
Continuous Drain Current, Silicon Limited t (T_A = 25°C) (2), (5)	I_D	-9	
Continuous Drain Current , Silicon Limited (T_A = 100°C) (2), (5)	I_D	-6	
Pulsed Drain Current (3)	I_{DM}	-48	
Power Dissipation (T_C = 25°C)	P_D	30.5	W
Linear Derating Factor	-	0.24	W/°C
Single Pulse Avalanche Energy (4)	E_{AS}	17	mJ
Avalanche Current	I_{AS}	13	A
Junction Temperature	T_J	-55 to 150	°C
Storage Temperature	T_{STG}	-55 to 150	

Thermal Characteristics

Parameter	Symbol	Max	Unit
Junction-to-Ambient Thermal Resistance (5)	$R_{\theta JA}$	62	°C/W
Junction-to-Case Thermal Resistance	$R_{\theta JC}$	4.1	

Static Electrical Characteristics (6)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250μA	-12	-	-	V
Gate Threshold Voltage	$V_{GS(TH)}$	V_{DS} = V_{GS} , I_D = -250μA	-0.5	-	-0.9	
Drain-to-Source Leakage Current	I_{DSS}	V_{DS} = -12V, V_{GS} = 0V	-	-	-1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{DS} = 0V, V_{GS} = ±12V	-	-	±100	nA
Drain-to-Source On-Resistance	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -8A	-	9.5	12.3	mΩ
		V_{GS} = -2.5V, I_D = -8A	-	13.5	17.5	mΩ

Dynamic Electrical Characteristics (6)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Transconductance	g_{fs}	V_{DS} = -5V, I_D = -10A	-	60	-	S
Total Gate Charge	Q_g	V_{GS} = -4.5V,	-	20	-	nC
Gate-to-Source Charge	Q_{gs}	V_{DS} = -6V,	-	2	-	
Gate-to-Drain Charge	Q_{gd}	I_D = -8A	-	6	-	
Turn-On Delay Time	$t_{d(on)}$	V_{GS} = -4.5V,	-	15	-	ns
Rise Time	t_r	V_{DS} = -6V,	-	25	-	
Turn-Off Delay Time	$t_{d(off)}$	I_D = -8A,	-	70	-	
Fall Time	t_f	R_G = 3.0Ω	-	45	-	
Input Capacitance	C_{iss}	V_{GS} = 0V,	-	2200	-	pF
Output Capacitance	C_{oss}	f = 200kHz,	-	400	-	
Reverse Transfer Capacitance	C_{rss}	V_{DS} = -6V	-	300	-	

Diode Characteristics (6)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Voltage	V_{SD}	V_{GS} = 0V, I_S = -8A	-	-0.8	-	V
Reverse Recovery Time	t_{rr}	V_{GS} = 0V, I_S = -5A,	-	50	-	ns
Reverse Recovery Charge	Q_{rr}	dI_S/dt = -100A/μs	-	5	-	nC

(1) Rated according to $R_{\theta JC}$.

(2) Rated according to $R_{\theta JA}$.

(3) Limited by maximum T_J.

(4) T_A = 25°C, L = 0.1mH, I_{AS} = 13A.

(5) Surface−mounted on 1 inch² FR4 board, 2 oz Cu.

(6) T_J = 25°C unless otherwise specified.

Typical Electrical Characteristics

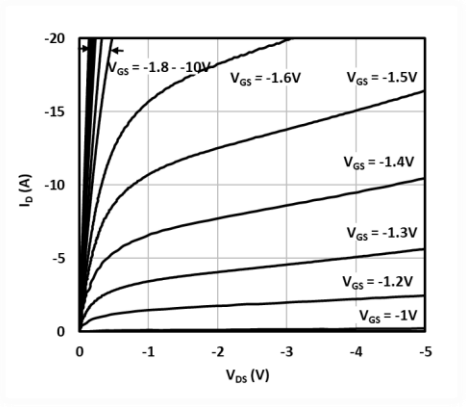


Fig. 1 Output characteristics

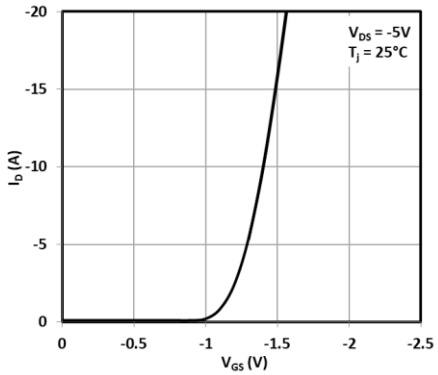


Fig. 2 Transfer characteristics

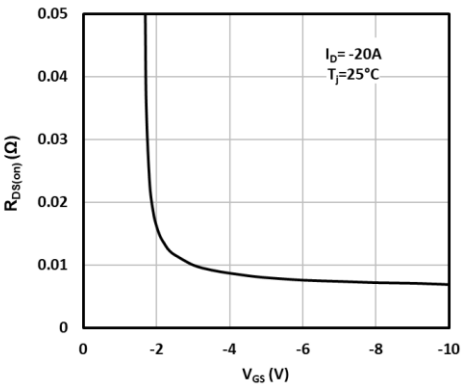


Fig.3 On-resistance vs. gate voltage

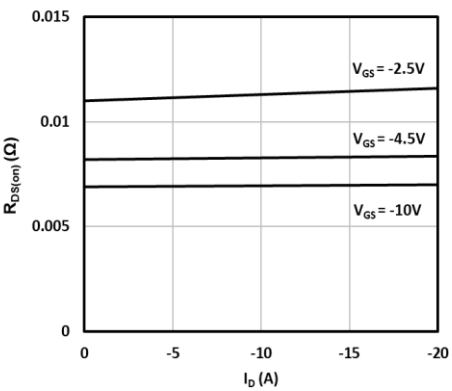


Fig.4 On-resistance vs. drain current

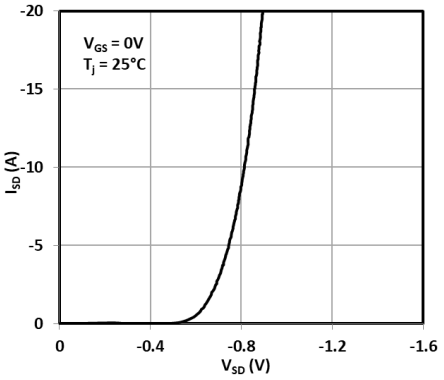


Fig.5 Source-to-drain diode forward characteristics

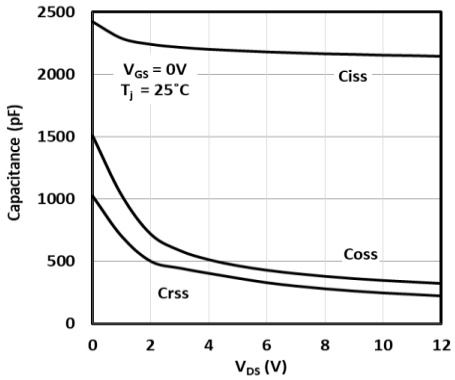


Fig.6 Capacitance vs. drain-to-source voltage

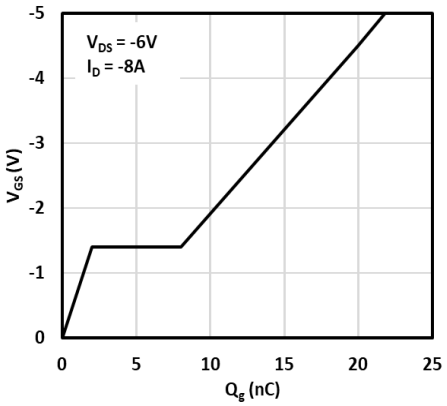


Fig.7 Gate-to-source voltage vs. gate charge

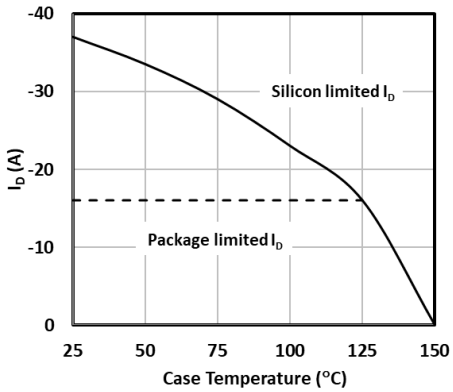


Fig.8 Maximum drain current vs. case temperature

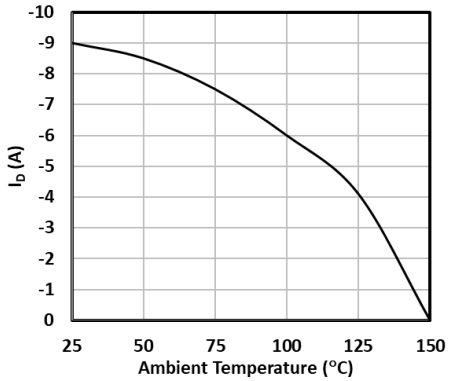
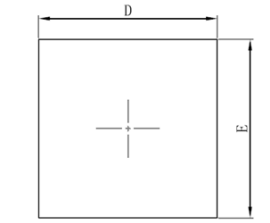
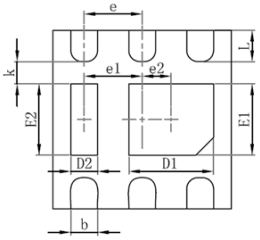


Fig. 9 Maximum drain current vs. ambient temperature

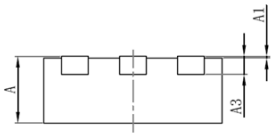
Package Drawing



Top View



Bottom View

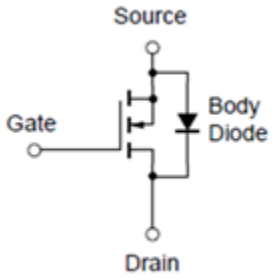


Side View

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700/0.800	0.800/0.900	0.028/0.032	0.032/0.035
A1	0.000	0.050	0.000	0.002
A3	0.203REF.		0.008REF.	
D	1.924	2.076	0.076	0.082
E	1.924	2.076	0.076	0.082
D1	0.850	1.050	0.033	0.041
E1	0.700	0.900	0.028	0.035
D2	0.200	0.400	0.008	0.016
E2	0.700	0.900	0.028	0.035
e1	0.650TYP.		0.026TYP.	
e2	0.325TYP.		0.013TYP.	
k	0.200MIN.		0.008MIN.	
b	0.250	0.350	0.010	0.014
e	0.650TYP.		0.026TYP.	
L	0.300	0.400	0.012	0.016

DFN 2x2

Equivalent Circuit



Revision history of JMY1852P specification

Version	Change Items	Effective Date
1.00	Initial Release	28-Feb-20

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