

JMY4853P

Product Preview

30V 12A P-Channel MOSFET

Features

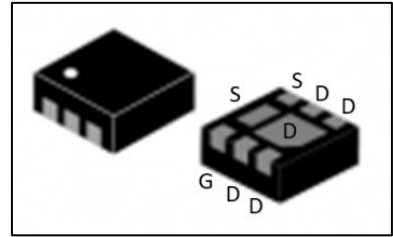
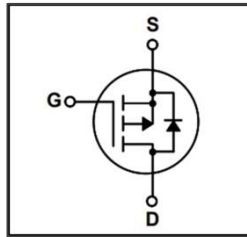
- Advanced trench technology
- Ultra-low on-resistance
- RoHS compliant



Product Summary	
V_{DS}	-30V
$R_{DS(ON)}$	27 m Ω (Typ.)
	35.1 m Ω (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
JMY4853P	Y4853P	DFN2x2	Tape & Reel

Absolute Maximum Ratings

Parameter	Symbol	Limit	Unit
Drain-to-Source Voltage	V_{DS}	-30	V
Gate-to-Source Voltage	V_{GS}	± 20	
Continuous Drain Current, Package Limited ($T_C = 25^\circ\text{C}$) ⁽¹⁾	I_D	-12	A
Continuous Drain Current, Silicon Limited ($T_C = 25^\circ\text{C}$) ⁽¹⁾	I_D	-21	
Continuous Drain Current, Silicon Limited ($T_C = 100^\circ\text{C}$) ⁽¹⁾	I_D	-13	
Continuous Drain Current, Silicon Limited t ($T_A = 25^\circ\text{C}$) ^{(2), (4)}	I_D	-6	
Continuous Drain Current, Silicon Limited ($T_A = 100^\circ\text{C}$) ^{(2), (4)}	I_D	-4	
Pulsed Drain Current ⁽³⁾	I_{DM}	-48	
Power Dissipation ($T_C = 25^\circ\text{C}$)	P_D	25	
Linear Derating Factor	-	0.2	W/ $^\circ\text{C}$
Single Pulse Avalanche Energy ⁽⁴⁾	E_{AS}	18	mJ
Avalanche Current	I_{AS}	12	A
Junction Temperature	T_J	-55 to 150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 to 150	

Thermal Characteristics

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

Static Electrical Characteristics⁽⁶⁾

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-to-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$	-30	-	-	V
Gate Threshold Voltage	$V_{GS(TH)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1.1	-	-2.3	
Drain-to-Source Leakage Current	I_{DSS}	$V_{DS} = -12\text{V}, V_{GS} = 0\text{V}$	-	-	-1	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 12\text{V}$	-	-	± 100	nA
Drain-to-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = -10\text{V}, I_D = -8\text{A}$	-	27	35.1	$\text{m}\Omega$
		$V_{GS} = -4.5\text{V}, I_D = -6\text{A}$	-	36	46.8	$\text{m}\Omega$

Dynamic Electrical Characteristics ⁽⁶⁾

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Transconductance	g_{fs}	$V_{DS} = -5V, I_D = -10A$	-	25	-	S
Total Gate Charge	Q_g	$V_{GS} = -10V,$	-	18	-	nC
Gate-to-Source Charge	Q_{gs}	$V_{DS} = -15V,$	-	3	-	
Gate-to-Drain Charge	Q_{gd}	$I_D = -8A$	-	3	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = -10V,$	-	9	-	ns
Rise Time	t_r	$V_{DS} = -15V,$	-	6	-	
Turn-Off Delay Time	$t_{d(off)}$	$I_D = -8A,$	-	32	-	
Fall Time	t_f	$R_G = 3.0\Omega$	-	15	-	
Input Capacitance	C_{iss}	$V_{GS} = 0V,$	-	1000	-	pF
Output Capacitance	C_{oss}	$f = 1MHz,$	-	90	-	
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = -15V$	-	70	-	

Diode Characteristics ⁽⁶⁾

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Forward Voltage	V_{SD}	$V_{GS} = 0V, I_S = -8A$	-	-0.9	-	V
Reverse Recovery Time	t_{rr}	$V_{GS} = 0V, I_S = -5A,$	-	20	-	ns
Reverse Recovery Charge	Q_{rr}	$di_S/dt = -100A/\mu s$	-	30	-	nC

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

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

(3) Limited by maximum T_J .

(4) $T_A = 25^\circ C, L = 0.1mH, I_{AS} = 12A$.

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

(6) $T_J = 25^\circ C$ unless otherwise specified.

Typical Electrical Characteristics

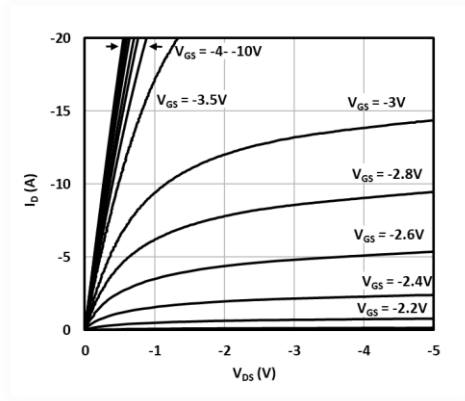


Fig. 1 Output characteristics

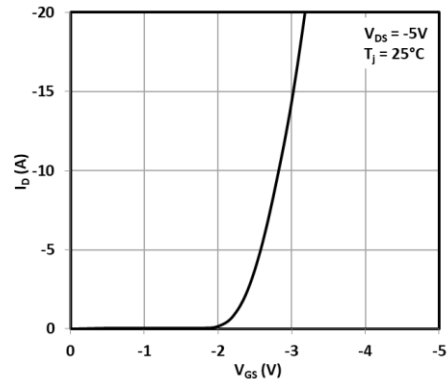


Fig. 2 Transfer characteristics

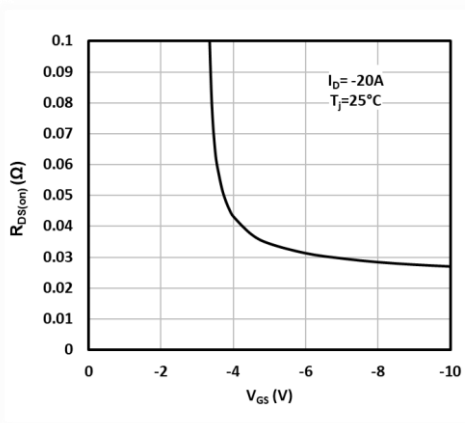


Fig.3 On-resistance vs. gate voltage

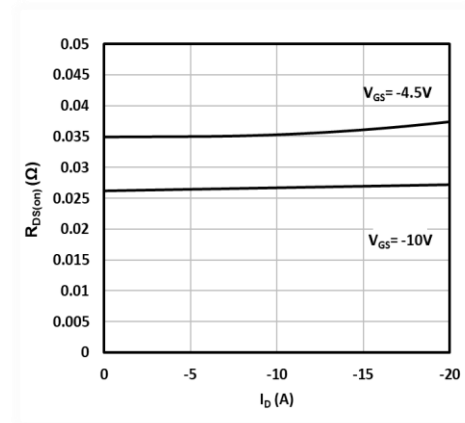


Fig.4 On-resistance vs. drain current

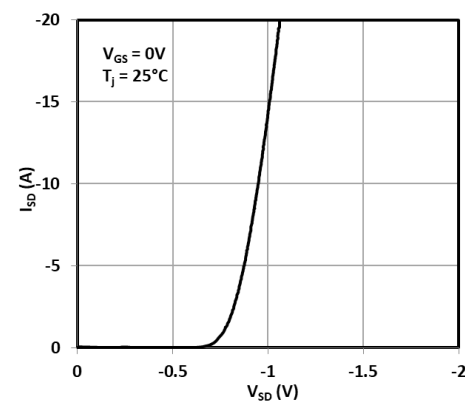


Fig.5 Source-to-drain diode forward characteristics

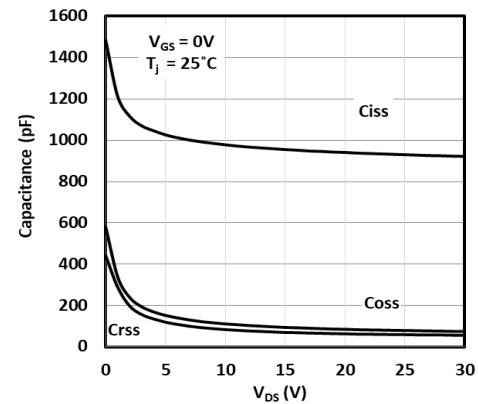


Fig.6 Capacitance vs. drain-to-source voltage

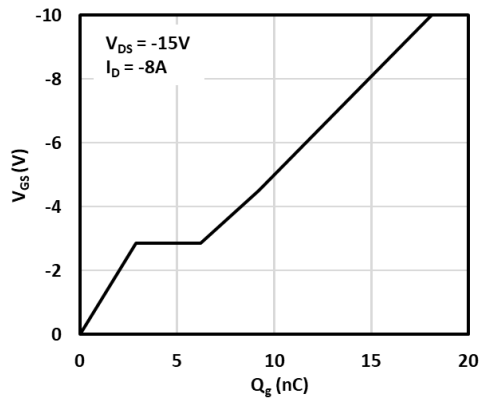


Fig.7 Gate-to-source voltage vs. gate charge

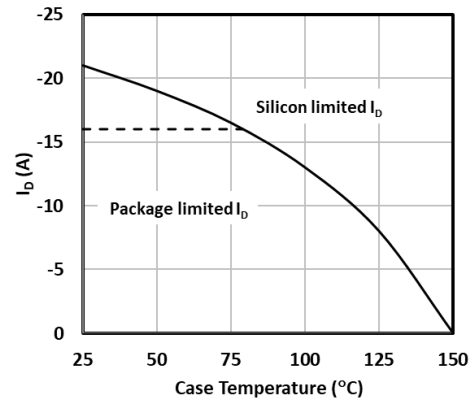


Fig.8 Maximum drain current vs. case temperature

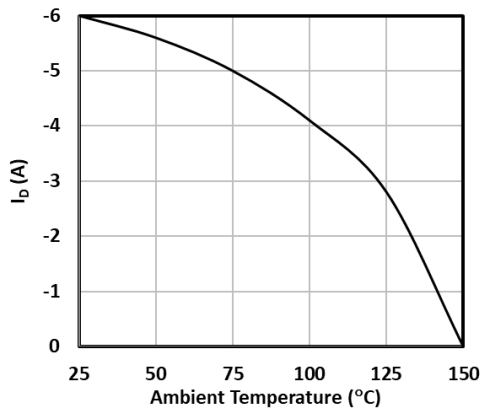
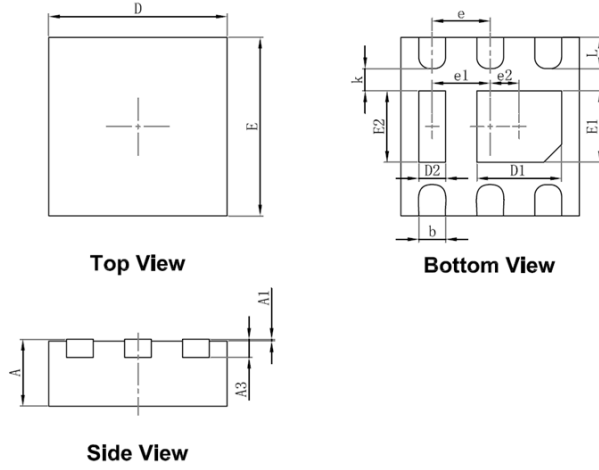


Fig. 9 Maximum drain current vs. ambient temperature

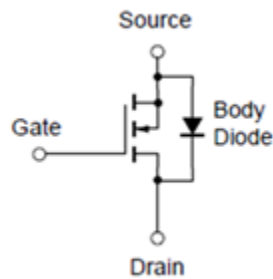
Package Drawing



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 JMY4853P specification

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

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