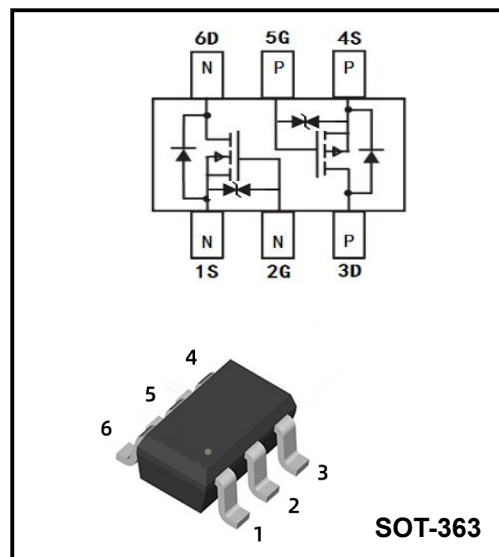


N-Channel and P-Channel Silicon MOSFETs

MAIN CHARACTERISTICS

I_D	0.63A
V_{DSS}	20V
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	$<0.4\Omega$ (Typ: 0.3Ω)
I_D	-0.46A
V_{DSS}	-20V
$R_{DS(on)-typ}(@V_{GS}=-4.5V)$	$<-0.7\Omega$ (Typ: -0.5Ω)



Marking Code	
YFW1012PN	P2N

FEATURES

- ♦ Low On-Resistance
- ♦ Low Gate Threshold Voltage
- ♦ Low Input Capacitance
- ♦ Fast Switching Speed
- ♦ Low Input/Output Leakage
- ♦ Lead Free By Design/RoHS Compliant (Note 2)
- ♦ ESD Protected up to 2kV

Maximum Ratings at $T_A=25^\circ\text{C}$ unless otherwise specified

Characteristics	Symbol	Value		Unit
		N-Ch	P-Ch	
Drain-Source Voltage	V_{DS}	20	-20	V
Gate-Source Voltage	V_{GS}	± 6	± 6	V
Continue Drain Current (note 1)	I_D	0.63	-0.46	A
Steady State		0.45	-0.33	
Pulsed Drain Current	I_{DM}	6	-6	A
Power Dissipation (note 1)	P_D	0.28	0.27	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	452	461	$^\circ\text{C/W}$
Operating Temperature Range	T_J	150	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	-55 to +150	$^\circ\text{C}$

Notes:

1. Device mounted on FR-4 PCB.
2. No purposefully added lead.

N-Channel Maximum Ratings at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbo	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	BV_{DSS}	20	-	-	V
Drain-Source Leakage Current	$V_{DS} = 20\text{ V}, V_{GS} = 0\text{ V}, T_J = 25^\circ\text{C}$	I_{DSS}	-	-	100	nA
Gate Leakage Current	$V_{GS} = \pm 4.5\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	± 1.0	μA
Gate-Source Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	$V_{GS(th)}$	0.5	-	1.0	V
Drain-Source On-State Resistance	$V_{GS} = 4.5\text{ V}, I_D = 600\text{ mA}$	$R_{DS(on)}$	-	0.3	0.4	Ω
	$V_{GS} = 2.5\text{ V}, I_D = 500\text{ mA}$		-	0.4	0.5	Ω
	$V_{GS} = 1.8\text{ V}, I_D = 350\text{ mA}$		-	0.5	0.7	Ω
Forward Transfer Admittance	$V_{DS} = 10\text{ V}, I_D = 400\text{ mA}$	$ Y_{fs} $	-	1.4	-	S
Diode Forward Voltage (Note 4)	$I_S = 150\text{ mA}, V_{GS} = 0\text{ V}$	V_{SD}	-	0.7	1.2	V
Input Capacitance	$V_{DS} = 16\text{ V}$ $V_{GS} = 0\text{ V}$ $f = 1\text{ MHz}$	C_{iss}	-	60.67	-	pF
Output Capacitance		C_{oss}	-	9.68	-	pF
Reverse Transfer Capacitance		C_{rss}	-	5.37	-	pF
Total Gate Charge	$V_{GS} = 4.5\text{ V}, V_{DS} = 10\text{ V},$ $I_D = 250\text{ mA}$	Q_g	-	736.6	-	PC
Gate-Source Charge		Q_{gs}	-	93.6	-	PC
Gate-Drain Charge		Q_{gd}	-	116.6	-	PC
Turn-on Delay Time	$V_{DD} = 10\text{ V}, V_{GS} = 4.5\text{ V}$ $R_L = 47\Omega, R_G = 10\Omega$ $I_D = 200\text{ mA}$	$t_{d(on)}$	-	5.1	-	ns
Rise Time		T_r	-	7.4	-	ns
Turn-Off Delay Time		$t_{d(OFF)}$	-	26.7	-	ns
Fall Time		t_f	-	12.3	-	ns

Notes: 4. Short duration pulse test used to minimize self-heating effect.

P-Channel Maximum Ratings at Ta=25°C unless otherwise specified

Characteristics	Test Condition	Symbo	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_D = -250\text{ }\mu\text{A}$	BV_{DSS}	-20	-	-	V
Drain-Source Leakage Current	$V_{DS} = -20\text{ V}, V_{GS} = 0\text{ V}, T_J = 25^\circ\text{C}$	I_{DSS}	-	-	-100	nA
Gate Leakage Current	$V_{GS} = \pm 4.5\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	-	-	± 2.0	μA
Gate-Source Threshold Voltage (note 2)	$V_{DS} = V_{GS}, I_D = -250\text{ }\mu\text{A}$	V_{GS(th)}	-0.5	-	-1.0	V
Drain-Source On-State Resistance (note 2)	$V_{GS} = -4.5\text{ V}, I_D = -350\text{ mA}$	R_{DS(on)}	-	0.5	0.7	Ω
	$V_{GS} = -2.5\text{ V}, I_D = -300\text{ mA}$		-	0.7	0.9	Ω
	$V_{GS} = -1.8\text{ V}, I_D = -150\text{ mA}$		-	1.0	1.3	Ω
Forward Transfer Admittance	$V_{DS} = -10\text{ V}, I_D = 250\text{ mA}$	 Y_{fs} 	-	0.9	-	S
Diode Forward Voltage (Note 4)	$I_S = -150\text{ mA}, V_{GS} = 0\text{ V}$	V_{SD}	-	-0.8	-1.2	V
Input Capacitance	$V_{DS} = -16\text{ V}$ $V_{GS} = 0\text{ V}$ $f = 1\text{ MHz}$	C_{iss}	-	59.76	-	pF
Output Capacitance		C_{oss}	-	12.07	-	pF
Reverse Transfer Capacitance		C_{rss}	-	6.36	-	pF
Total Gate Charge	$V_{GS} = -4.5\text{ V}, V_{DS} = -10\text{ V},$ $I_D = -250\text{ mA}$	Q_g	-	622.4	-	PC
Gate-Source Charge		Q_{gs}	-	100.3	-	PC
Gate-Drain Charge		Q_{gd}	-	132.3	-	PC
Turn-on Delay Time	$V_{DD} = -10\text{ V}, V_{GS} = -4.5\text{ V}$ $R_L = 47\Omega, R_G = 10\Omega$ $I_D = -200\text{ mA}$	t_{d(on)}	-	5.1	-	ns
Rise Time		T_r	-	8.1	-	ns
Turn-Off Delay Time		t_{d(OFF)}	-	28.4	-	ns
Fall Time		t_f	-	20.7	-	ns

Notes: 4. Short duration pulse test used to minimize self-heating effect.

Typical Characteristics

N-channel

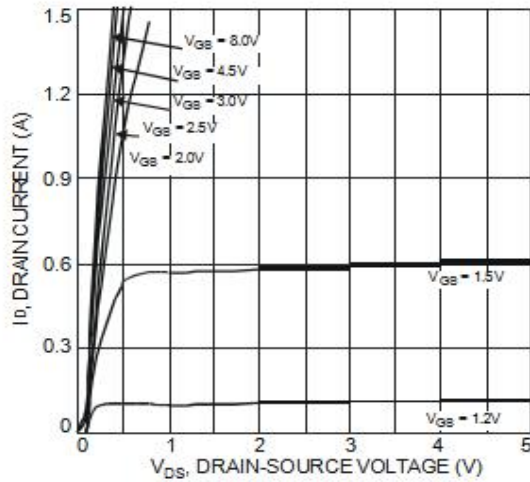


Fig. 1 Typical Output Characteristics

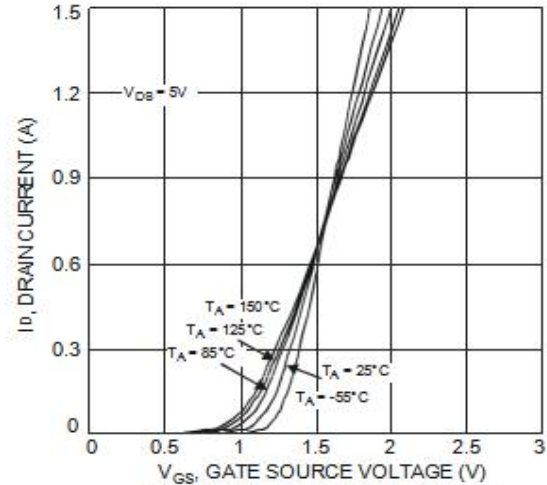


Fig. 2 Typical Transfer Characteristics

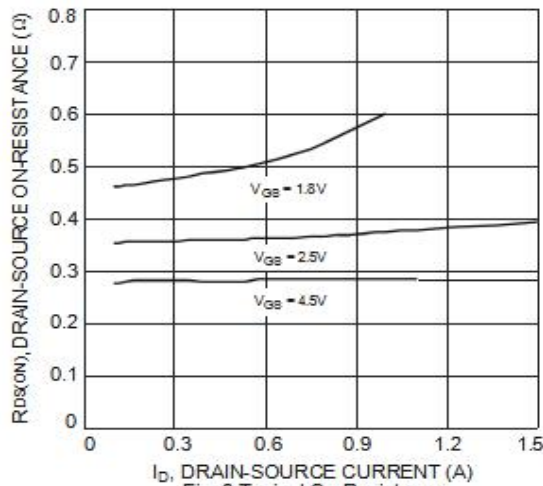


Fig. 3 Typical On-Resistance vs. Drain Current and Gate Voltage

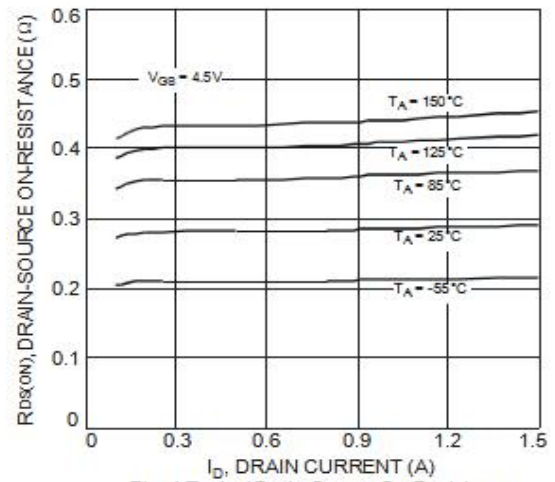


Fig. 4 Typical Drain-Source On-Resistance vs. Drain Current and Temperature

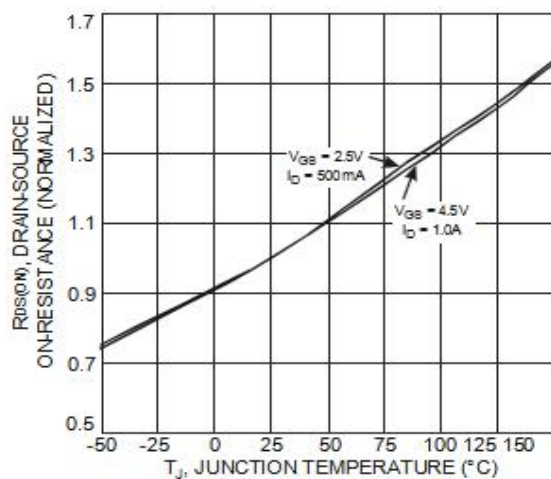


Fig. 5 On-Resistance Variation with Temperature

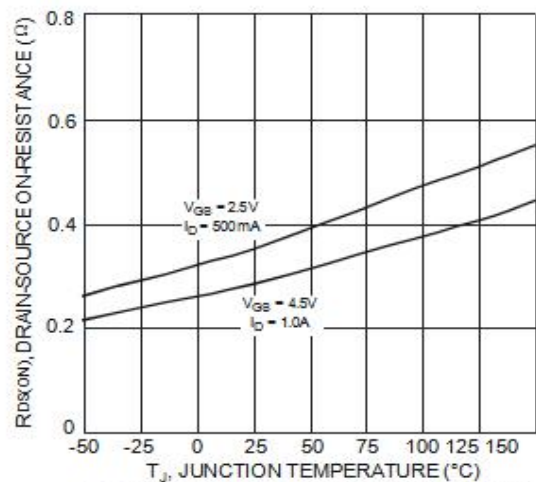
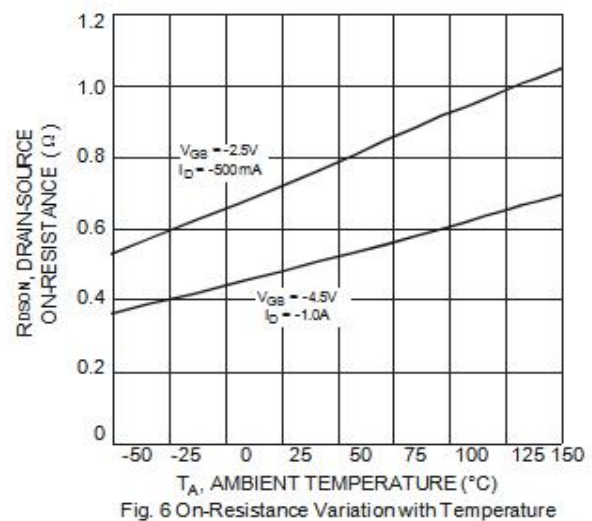
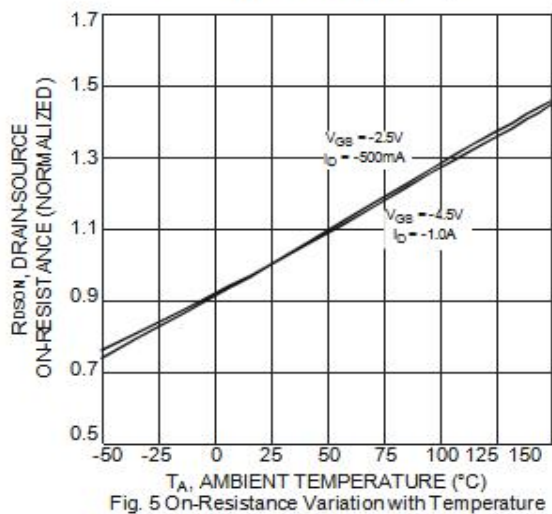
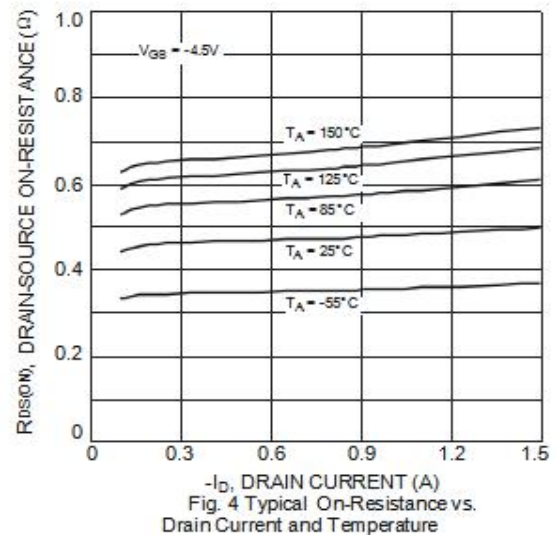
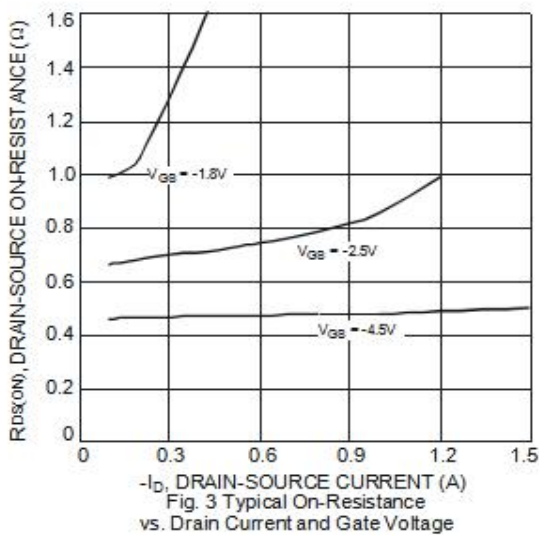
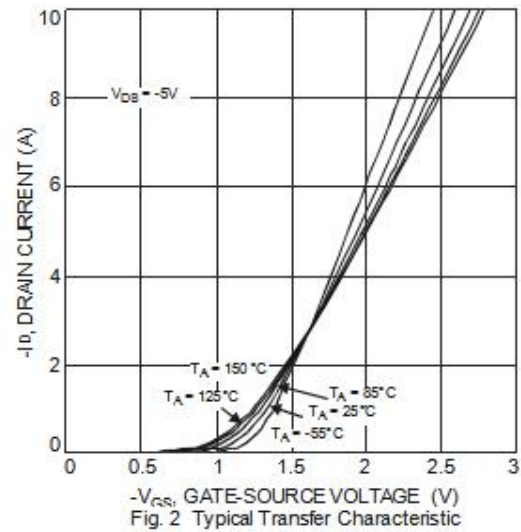
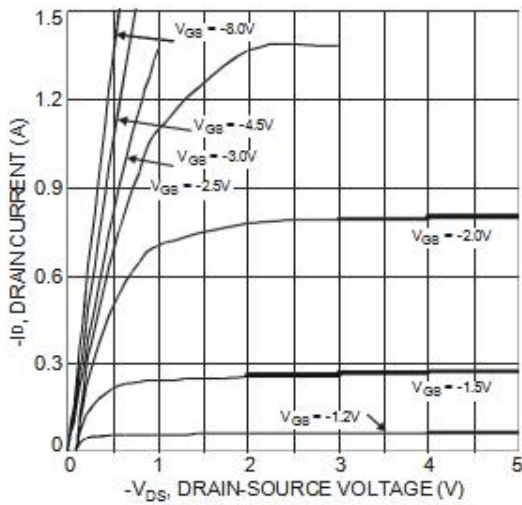


Fig. 6 On-Resistance Variation with Temperature

Typical Characteristics

P-channel



Ordering information

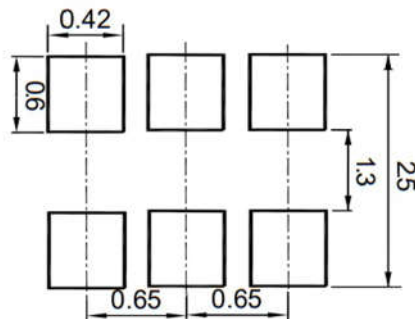
Package	Packing Description	Packing Quantity
SOT-363	Tape/Reel, 7" reel	3000PCS/Reel 120000PCS/Carton

Package Dimensions

SOT-363

Dim.	Millimeter(mm)		mil	
	Min.	Max.	Min.	Max.
A	0.8	1.1	32	43
A1	-	0.1	-	3.94
bp	0.20	0.30	7.87	11.81
c	0.10	0.25	3.94	9.84
D	1.8	2.2	70.87	86.61
E	1.15	1.35	45.28	53.15
e	1.3		51.18	
e1	0.65		25.6	
HE	2.0	2.2	78.74	86.6
Lp	0.15	0.45	5.90	17.71
Q	0.15	0.25	5.90	9.84
v	0.2		7.78	
w	0.2		7.78	
y	0.1		3.94	

The recommended mounting pad size



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