

-20V P-Channel Enhancement Mode Field Effect Transistor

MAIN CHARACTERISTICS

I_D	-7.0A
V_{DSS}	-20V
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	<26mΩ (Typ:20mΩ)
$R_{DS(on)-typ}(@V_{GS}=2.5V)$	<37mΩ (Typ:27mΩ)

Features

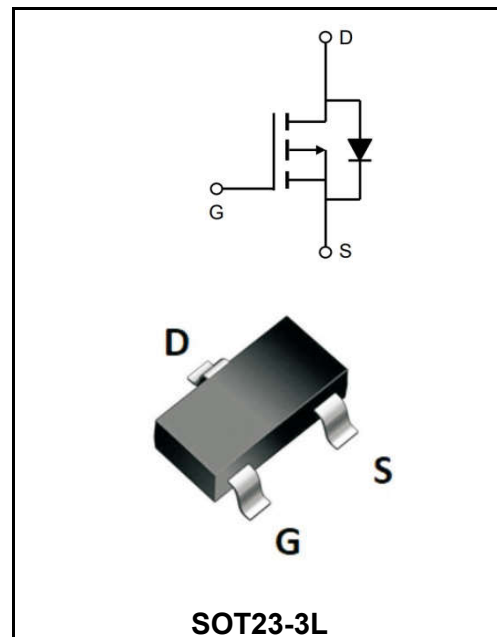
- ◆Advanced Trench Technology
- ◆Provide Excellent RDS(ON) and Low Gate Charge
- ◆Lead free product is acquired

Application

- ◆Load Switch
- ◆PWM Application
- ◆Power management

Mechanical Data

- ◆Case: SOT23-3L
- ◆Epoxy UL: 94V-0.
- ◆Mounting Position: Any.



Marking Code

YFW7P02MI	7P02
-----------	------

Maximum Ratings & Thermal Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified.)

Parameters	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	-7.0	A
Power Dissipation	P_D	1.1	W
Junction Temperature	T_j	-50-+150	°C
Storage Temperature	T_{stg}	-50-+150	°C
Thermal Resistance From Junction to Ambient	$R_{\theta JA}$	114	°C/W

Electrical Characteristics

(Ratings at 25°C ambient temperature unless otherwise specified).

Characteristics	Test Condition	Symbols	Min	Typ	Max	Units
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	BV_{DSS}	-20	-	-	V
Gate-Threshold voltage*	$V_{DS}=V_{GS}, I_D=-250\mu A$	$V_{GS(th)}$	-0.4	-0.7	-1.0	V
Gate-body Leakage	$V_{DS}=\pm 12V, V_{GS}=0V$	I_{GSS}	-	-	± 100	nA
Zero Gate Voltage Drain current	$V_{DS}=-20V, V_{GS}=0V$	I_{DSS}	-	-	-1	μA
Drain-Source On-Resistance (note 2)	$V_{GS}=-4.5V, I_D=-7A$	$R_{DS(ON)}$	-	20	26	m Ω
	$V_{GS}=-4.5V, I_D=-6A$		-	27	37	
Diode Forward Current		I_S	-	-	-7.0	A
Source Diode Forward Current		I_{SM}	-	-	-20	A
Diode forward voltage(note 1)	$I_S=-7A, V_{GS}=0V$	V_{SD}	-	-	-1.2	V
Input capacitance	$V_{DS}=-10V, V_{GS}=0V, f=1MHz$	C_{iss}	-	1200	-	pF
Output capacitance		C_{oss}	-	191	-	
Reverse Transfer capacitance		C_{rss}	-	168	-	
Total gate charge	$V_{DS}=-10V, I_D=-5A, V_{GS}=-4.5V$	Q_g	-	33.7	-	nC
Gate-source charge		Q_{gs}	-	3.5	-	
Gate-drain charge		Q_{gd}	-	10.5	-	
Turn-on Time	$V_{DD}=-10V$ $I_D=-5A$ $V_{GS}=-4.5V$ $R_{GEN}=10\Omega$	$t_{d(on)}$	-	11	-	nS
Rise time		T_r	-	35	-	
Turn-off Time		$t_{d(OFF)}$	-	30	-	
Fall time		t_f	-	10	-	

Notes:1.Repetitive Rating:Pulse Width Limited by Maximum Junction Temperature

2.Pulse Test: Pulse Width $\leq 300\mu s$,Duty Cycle $\leq 2\%$

Typical characteristics

Figure1: Output Characteristics

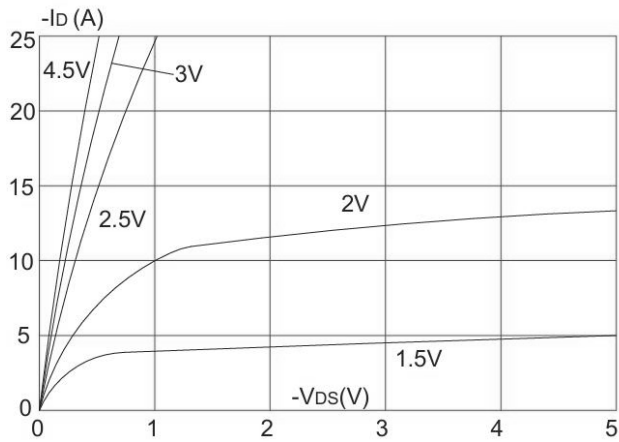


Figure 2: Typical Transfer Characteristics

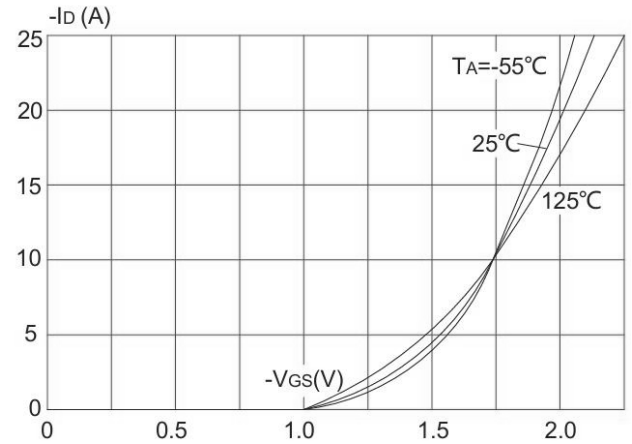


Figure 3: On-resistance vs. Drain Current

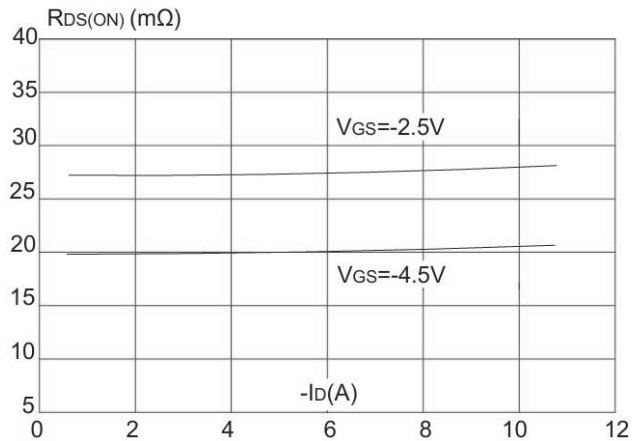


Figure 4: Body Diode Characteristics

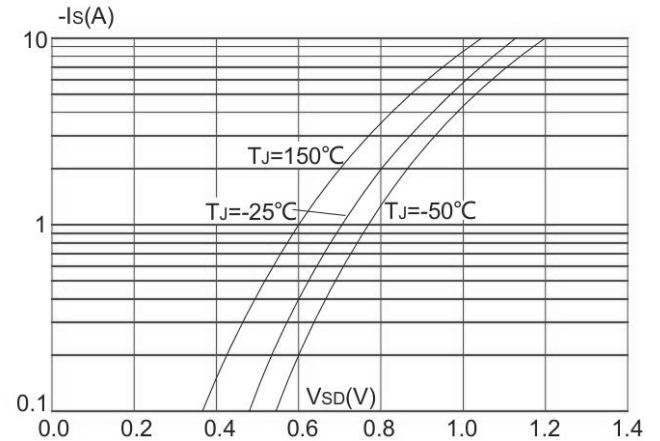


Figure 5: Gate Charge Characteristics

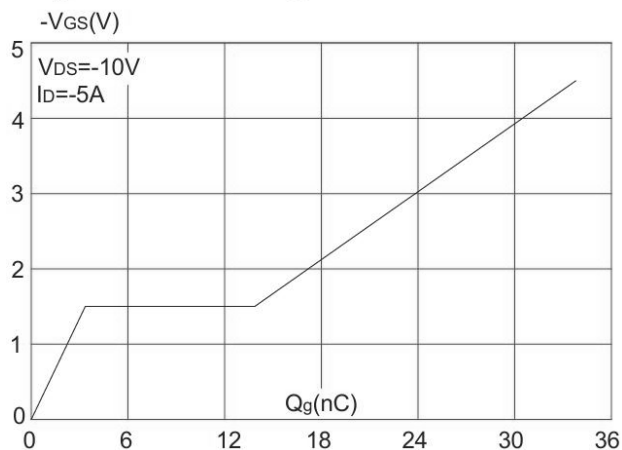


Figure 6: Capacitance Characteristics

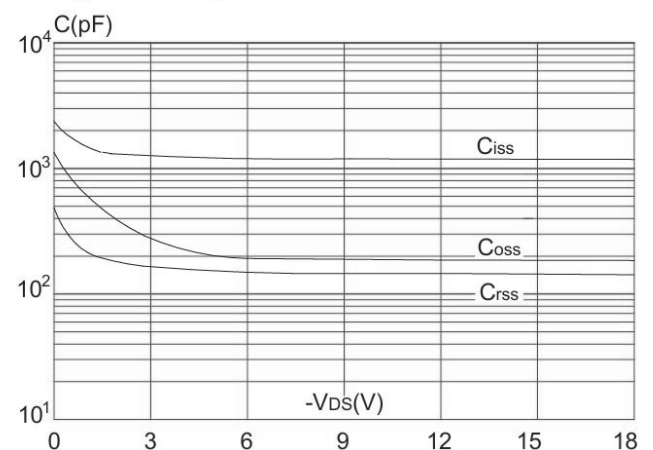


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

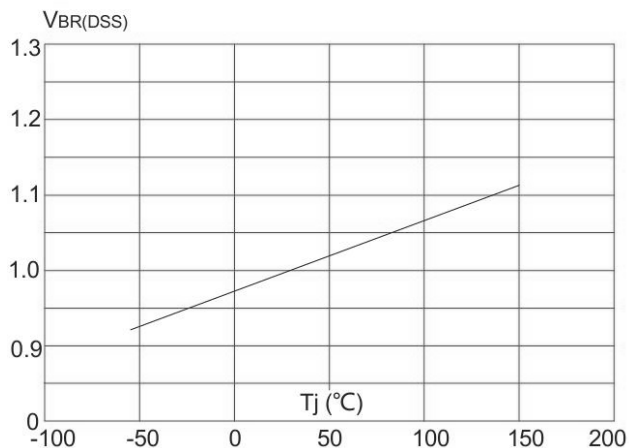


Figure 8: Normalized on Resistance vs. Junction Temperature

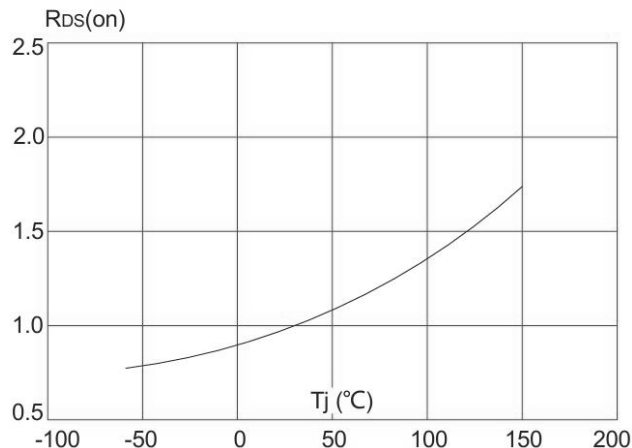


Figure 9: Maximum Safe Operating Area

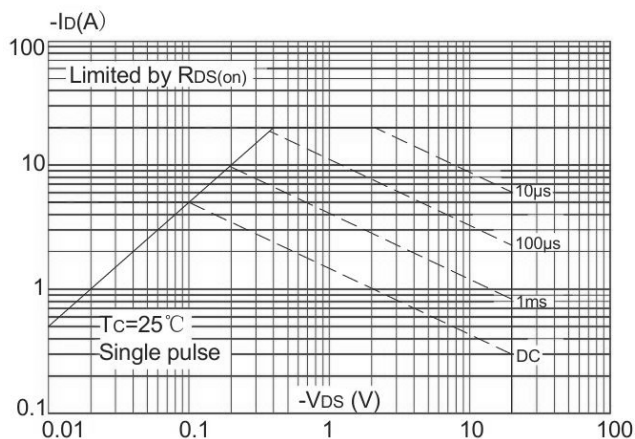


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

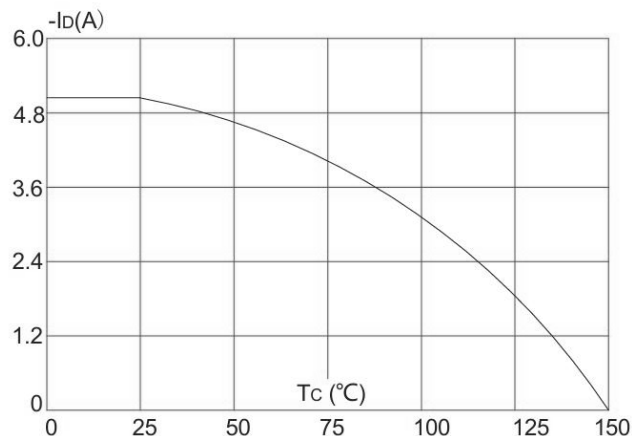
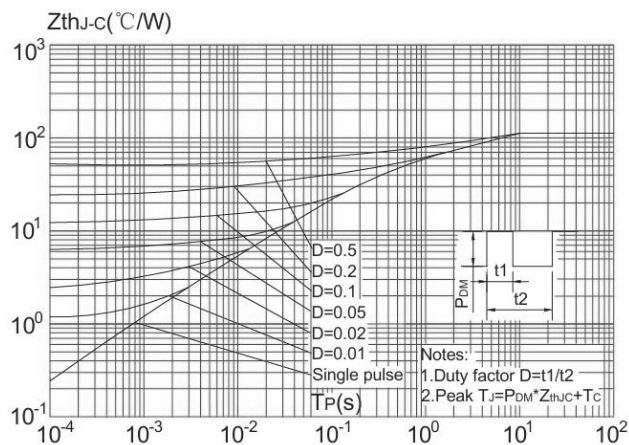


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Ordering information

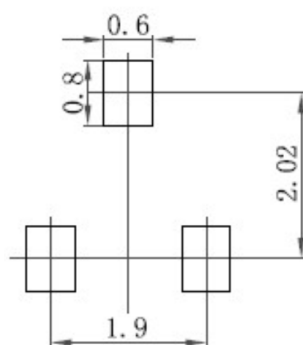
Package	Packing Description	Base Quantity	Packing Quantity
SOT23-3L	Tape/Reel, 7" reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

Package Dimensions

SOT23-3L

Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	1.05	1.25	41	49.2
A1	0.10		3.93	
A2	1.05	1.15	41	45
b	0.30	0.50	12	20
c	0.10	0.20	3.93	7.9
D	2.82	3.02	111	119
E	1.50	1.70	59	67
E1	2.65	2.95	104	116
e	0.95		37.4	
e1	1.80	2.00	71	78
L	0.30	0.066	12	26
Θ	8°			

The recommended mounting pad size



Disclaimer

The information presented in this document is for reference only. GuangDong Youfeng Microelectronics Co.,Ltd. reserves the right to make changes without notice for the specification of the products displayed herein to improve reliability, function or design or otherwise. The product listed herein is designed to be used with ordinary electronic equipment or devices, and not designed to be used with equipment or devices which require high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers and other safety devices), YFW or anyone on its behalf, assumes no responsibility or liability for any damages resulting from such improper use of sale. This publication supersedes & replaces all information previously supplied. For additional information, please visit our website <https://www.yfwdiode.com>, or consult YFW sales office for further assistance.