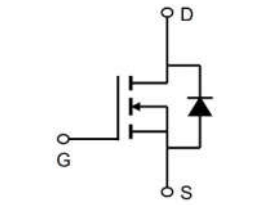
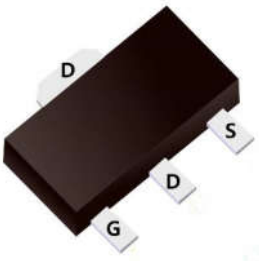
30V N-Channel Enhancement Mode Field Effect Transistor

MAIN CHARACTERISTICS

I_D	30A
V_{DS}	30V
R_{DSON}-typ(@V_{GS}=10V)	＜13mΩ(Typ:10mΩ)
R_{DSON}-typ(@V_{GS}=4.5V)	＜20.5mΩ(Typ:15mΩ)





SOT-89

Marking Code	
YFW30N03SI	YFW 30N03

FEATURES

- Lead free product is acquired
- Special process technology for high ESD capability
- High density cell design for ultra low RDS(on)
- Good stability and uniformity with high EAS
- Power Management
- Excellent package for good heat dissipation
- Power switching application
- Hard switching and high frequency circuits
- Uninterruptible power supply

Absolute Maximum Ratings (Ta=25℃ unless otherwise noted)

Parameter	Symbols	Rating	Units
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	30	A
Pulsed Drain Current (note 1)	I_{DM}	80	A
Power Dissipation	P_D	69	W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55-+150	℃
Thermal Resistance From Junction to Ambient (note 2)	$R_{\theta JA}$	1.8	℃/W

Electrical Characteristics(Ta=25℃ unless otherwise noted)

Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	BV_{DSS}	30			V
Zero Gate Voltage Drain current	V_{DS}=30V, V_{GS}=0V	I_{DSS}			1	uA
Gate-body Leakage	V_{DS}=±20V, V_{DS}=0V	I_{GSS}			±100	nA
Drain-Source On-Resistance (note 3)	V_{GS}=10V, I_D=10A	$R_{DS(ON)}$		10.0	13	mΩ
	V_{GS}=4.5V, I_D=5A			15.0	20.5	
Gate-Threshold voltage	V_{DS}=VGS, I_D=250uA	$V_{GS(th)}$	1.0	1.5	2.2	V
Diode forward voltage	I_S=20A, V_{GS}=0V	V_{SD}			1.2	V
Input capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz	C_{iss}		853		pF
Output capacitance		C_{oss}		106		
Reverse Transfer capacitance		C_{rss}		82		
Total Gate Charge	V_{GS}=0 to 10V V_{DS}=15V I_D=15A	Q_g		16		nC
Gate Source Charge		Q_{gs}		3.6		
Gate Drain(Miller) Charge		Q_{gd}		3.4		
Turn-on Time	V_{GS}=10V I_D=15A V_{DD}=15V R_{GEN}=3Ω	$t_{d(on)}$		6		ns
Rise time		T_r		15		
Turn-off Time		$t_{d(OFF)}$		17		
Fall time		t_f		5		
Body Diode Reverse Recovery Time	I_F=13A, di/dt=100A/us	t_{rr}		9.4		ns
Body Diode Reverse Recovery Charge		Q_{rr}		3.3		nC

Notes:
1.Repetitive Rating:Pulse Width Limited by Maximum Junction Temperature.
2.RθJA is measured with the device mounted on a 1inch² pad of 2oz copper FR4 PCB.
3.Pulse Test: Pulse Width ≤300us, Duty Cycle≤0.5%.

Typical characteristics

Figure 1: Output Characteristics

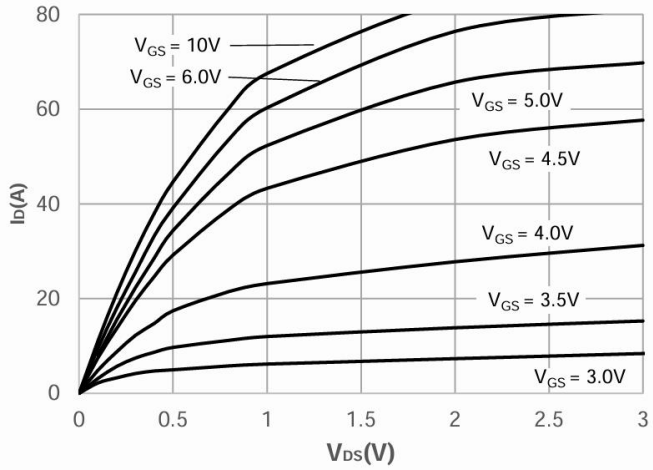


Figure 2: Typical Transfer Characteristics

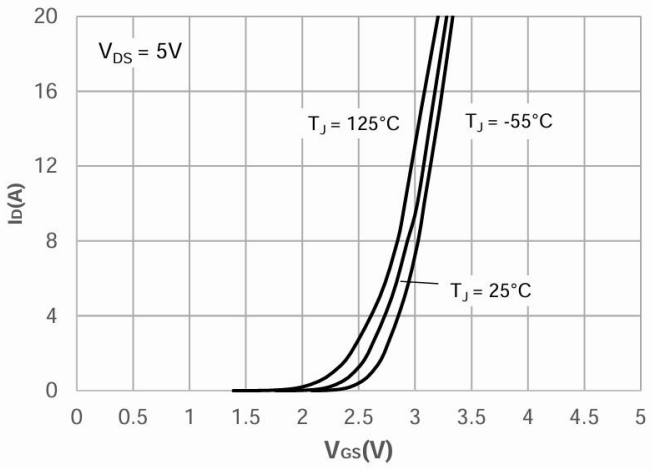


Figure 3: On-resistance vs. Drain Current

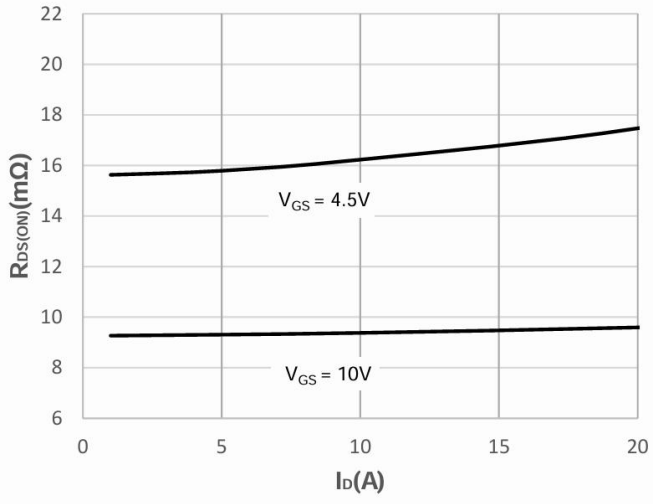


Figure 4: Body Diode Characteristics

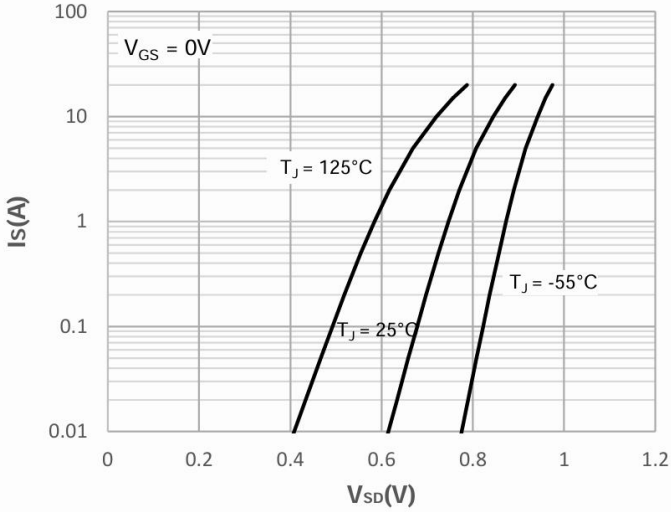


Figure 5: Gate Charge Characteristics

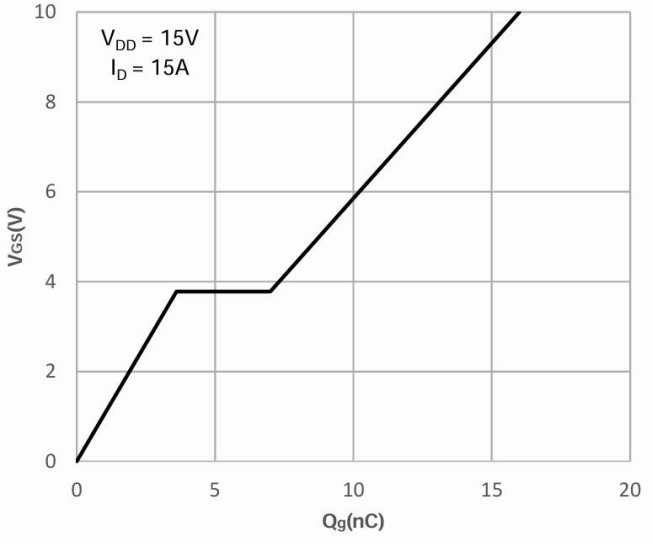
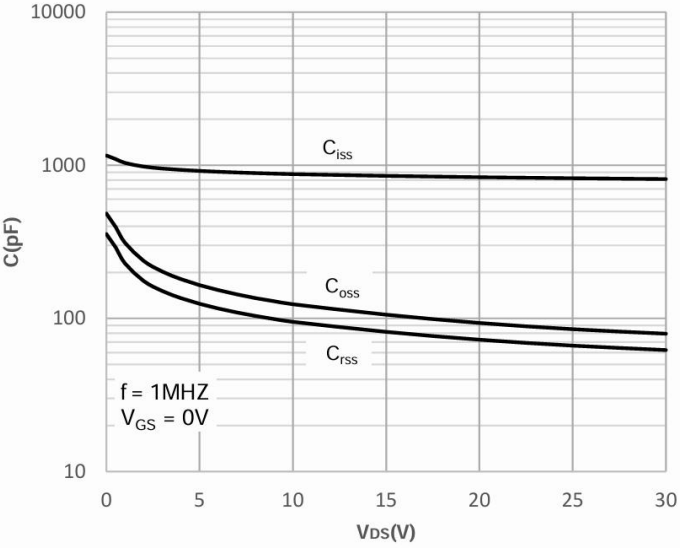


Figure 6: Capacitance Characteristics



Typical characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

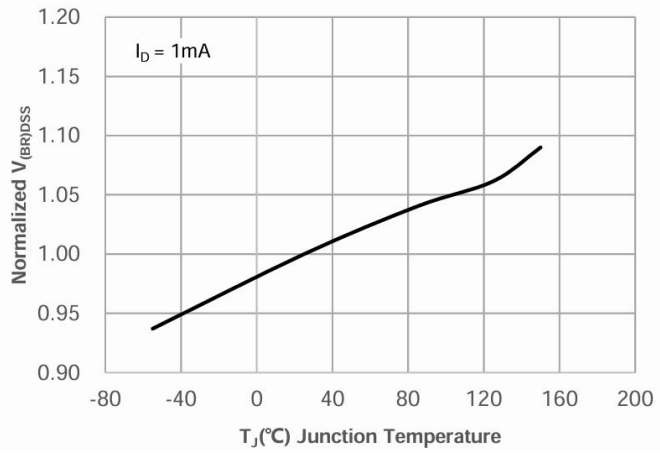


Figure 8: Normalized on Resistance vs. Junction Temperature

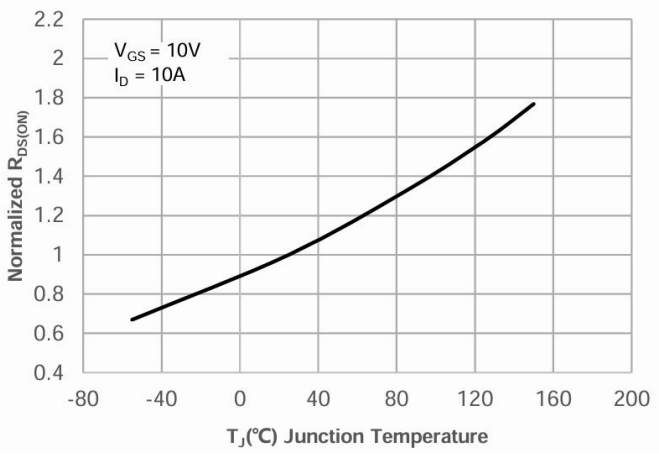


Figure 9: Maximum Safe Operating Area

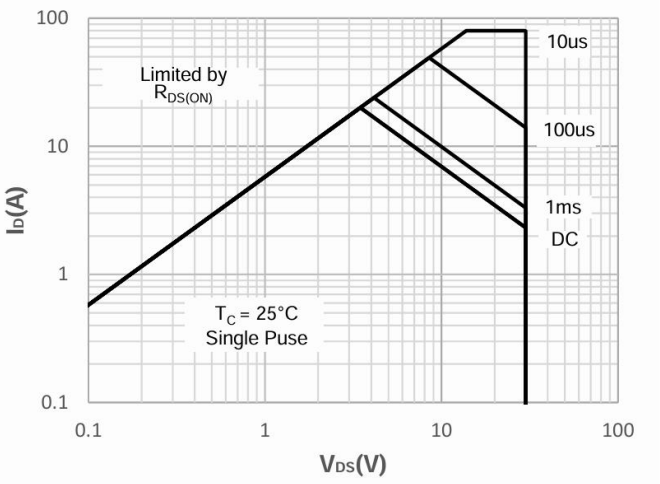


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

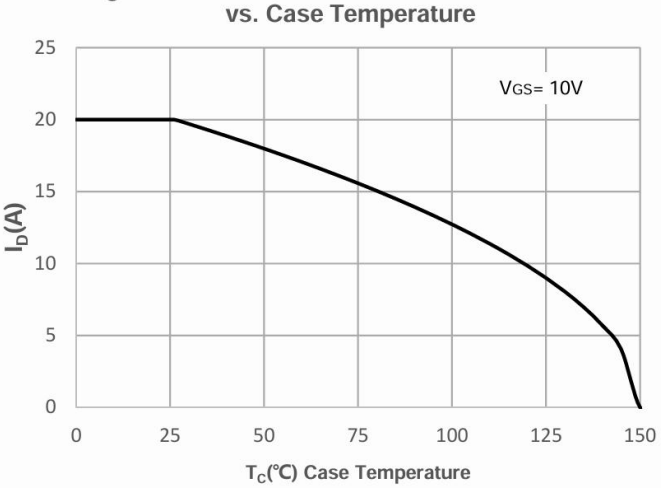


Figure 11: Normalized Maximum Transient Thermal Impedance

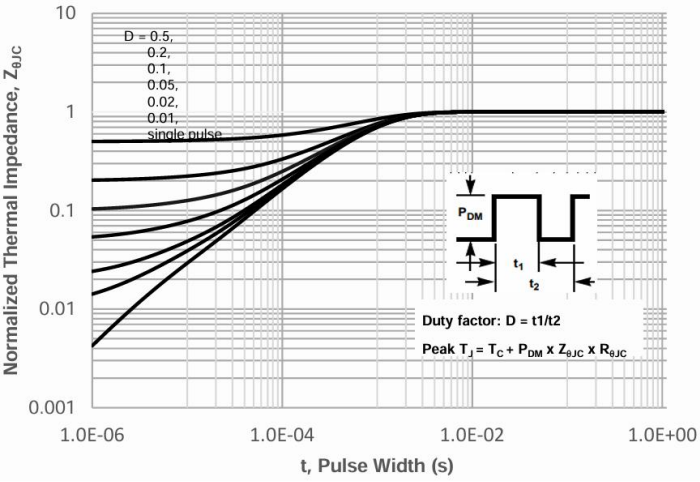
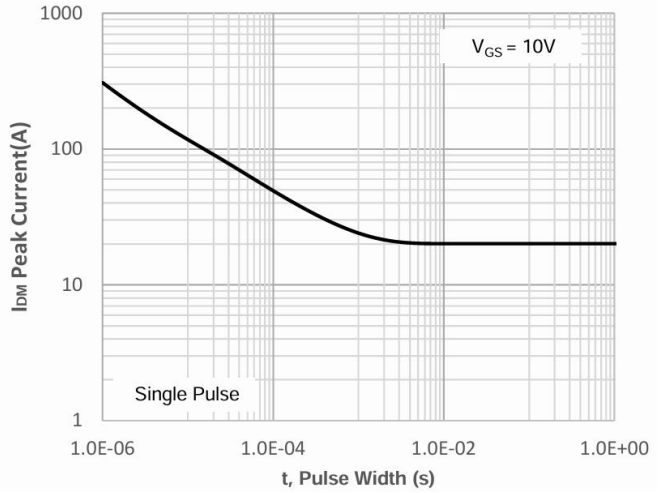


Figure 12: Peak Current Capacity

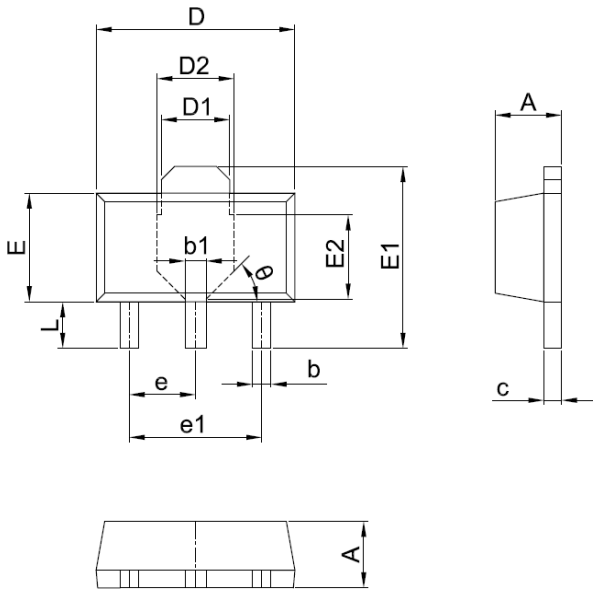


Ordering information

Package	Packing Description	Base Quantity	Packing Quantity
SOT-89	Tape/Reel,7"reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton

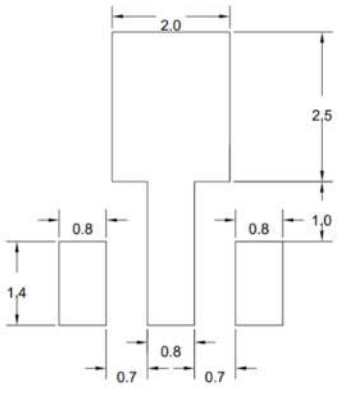
Package Dimensions

SOT-89



Dim	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	1.40	1.60	0.055	0.063
b	0.32	0.52	0.013	0.020
b1	0.38	0.58	0.015	0.023
c	0.35	0.45	0.014	0.018
D	4.40	4.60	0.173	0.181
D1	1.45	1.65	0.057	0.065
D2	1.70	1.80	0.067	0.071
E	2.30	2.60	0.091	0.102
E1	3.95	4.25	0.156	0.167
E2	1.80	2.00	0.071	0.079
e	1.40	1.60	0.055	0.063
e1	2.80	3.20	0.110	0.126
L	0.90	1.20	0.035	0.047

The recommended mounting pad size



UNIT:MM

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