

100V N-Channel Trench FET Power MOSFET

MAIN CHARACTERISTICS

I_D	10A
V_{DS}	100V
$R_{DS(on)-typ}(@V_{GS}=10V)$	<75mΩ(Typ:60mΩ)
$R_{DS(on)-typ}(@V_{GS}=4.5V)$	<95mΩ(Typ:80mΩ)

GENERAL DESCRIPTION

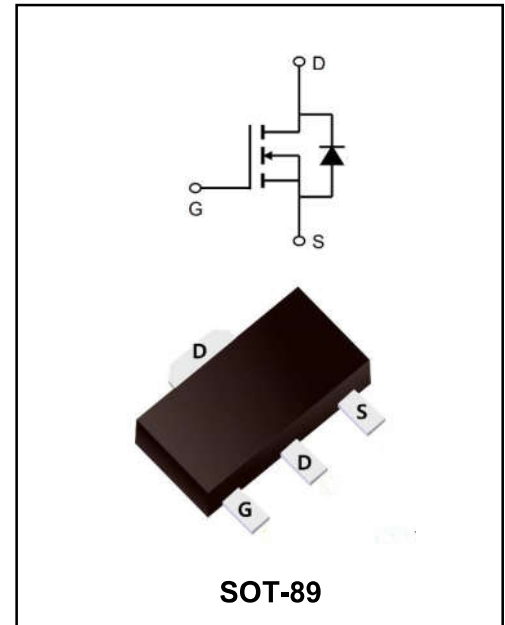
The YFWG10N10SI usesSGT technology and designto provide excellent $R_{DS(on)}$ with low gate charge. It can beused in a wide variety of applications. The package form is SOT-89, which accords with the ROHS standard and Halogen Free standard.

FEATURES

- ◆YFW-SGT technology
- ◆Fast Switching
- ◆Low Gate Charge and $R_{DS(on)}$
- ◆Low Reverse transfer capacitances

APPLICATIONS

- ◆DC-DC converter
- ◆Portable Equipment
- ◆Power management



Marking Code

YFWG10N10SI	YFW G10N10
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Maximum Ratings & Thermal Characteristics

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

Parameters	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	10	A
Pulsed Drain Current	I_{DM}	18	A
Power Dissipation	P_D	2.0	W
Junction Temperature	T_J	-55—150	°C
Storage Temperature	T_{STG}	-55—150	°C
Thermal Resistance From Junction to Ambient	$R_{\theta JA}$	62.5	°C/W

Note: The $R_{\theta JA}$ is the sum of the thermal resistance from junction to ambient and depend on package type

Electrical Characteristics

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

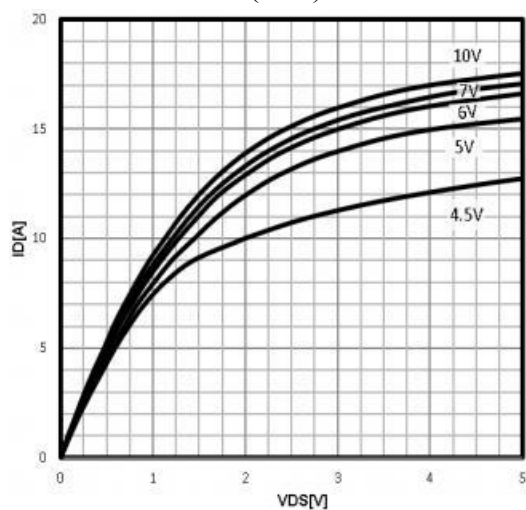
Parameter	Test Condition	Symbols	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	100			V
Gate-Threshold voltage*	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(th)}$	1.3	1.8	2.4	V
Gate-body Leakage	$V_{DS}=0V, V_{GS}=\pm 20V$	I_{GSS}			± 100	nA
Zero Gate Voltage Drain current	$V_{DS}=100V, V_{GS}=0V$	I_{DSS}			1	μA
Drain-Source On-Resistance (a)	$V_{GS}=10V, I_D=4A$	$R_{DS(on)}$		60	75	m Ω
	$V_{GS}=4.5V, I_D=3A$			80	95	
Input capacitance	$V_{DS}=50V$ $V_{GS}=0V$ $f=1MHz$	C_{iss}		171		pF
Output capacitance		C_{oss}		58		
Reverse Transfer capacitance		C_{rss}		1.9		
Gate resistance		R_g		9.4		Ω
Total gate charge	$V_{DS}=50V$ $V_{GS}=10V$ $I_D=2A$	Q_G		3.7		nC
Gate-source charge		Q_{GS}		0.8		
Gate-drain charge		Q_{GD}		1		
Turn-on Time	$I_D=2A$ $V_{DD}=50V$ $V_{GS}=10V$ $R_G=5\Omega$	$t_{d(ON)}$		8		ns
Rise time		t_r		16		
Turn-off Time		$t_{d(OFF)}$		17		
Fall time		t_f		14		
Diode Forward current	$T_C=25^\circ C$	I_S			4.5	A
Diode Forward voltage	$I_S=2A, V_{GS}=0V$	V_{SD}			1.2	V

Notes: Repetitive rating; pulse width limited by maximum junction temperature

Typical characteristics

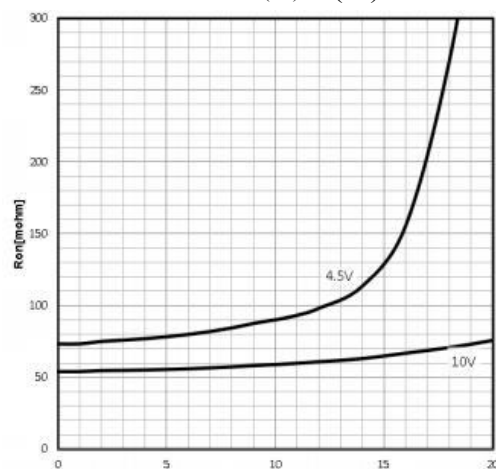
Typ. output characteristics

$$I_D = f(V_{DS})$$



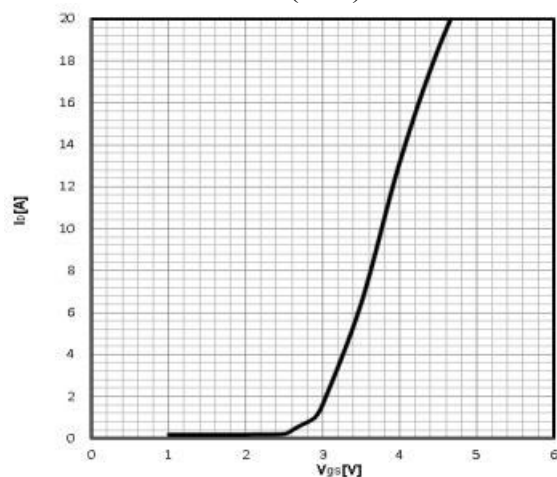
Typ. drain-source on resistance

$$R_{DS(on)} = f(I_D)$$



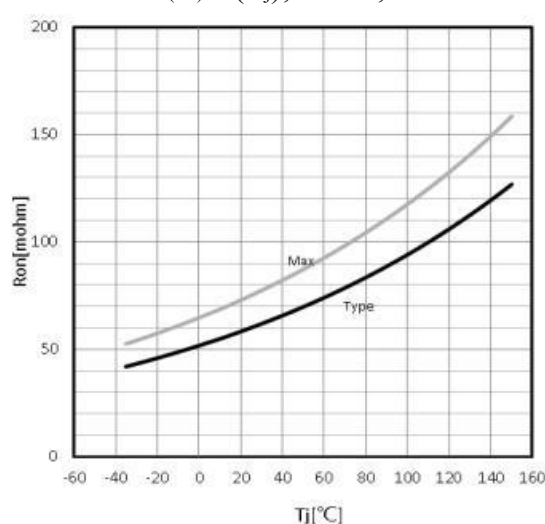
Typ. transfer characteristics

$$I_D = f(V_{GS})$$



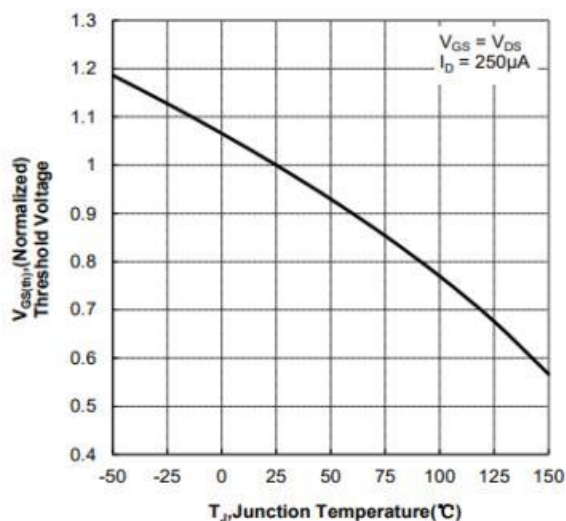
Drain-source on-state resistance

$$R_{DS(on)} = f(T_j); I_D = 4A; V_{GS} = 10V$$



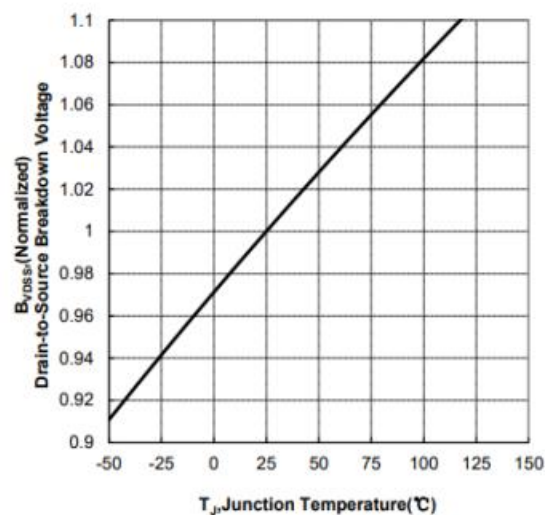
Gate Threshold Voltage

$$V_{TH} = f(T_j); I_D = 250\mu A$$



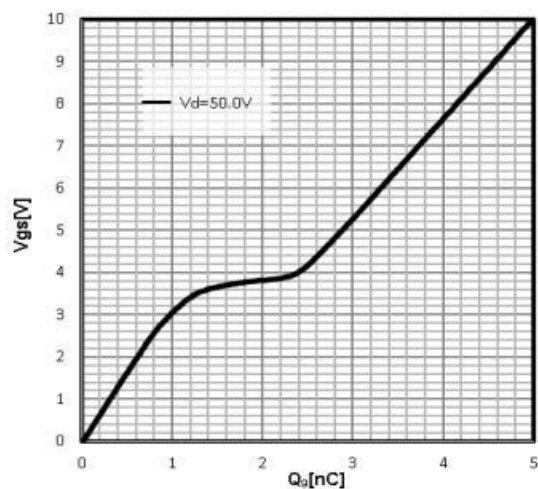
Drain-source breakdown voltage

$$V_{BR(DSS)} = f(T_j); I_D = 250\mu A$$

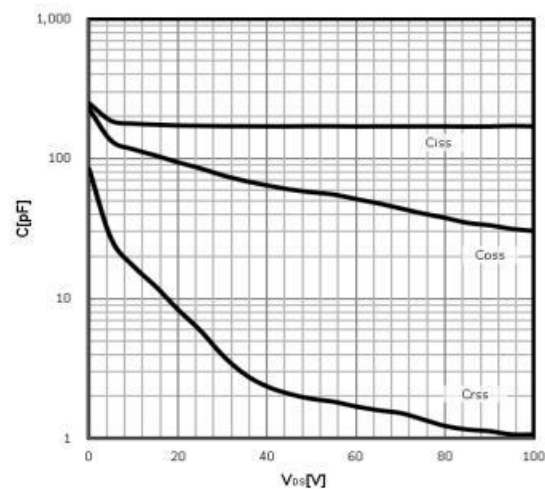


Typical characteristics

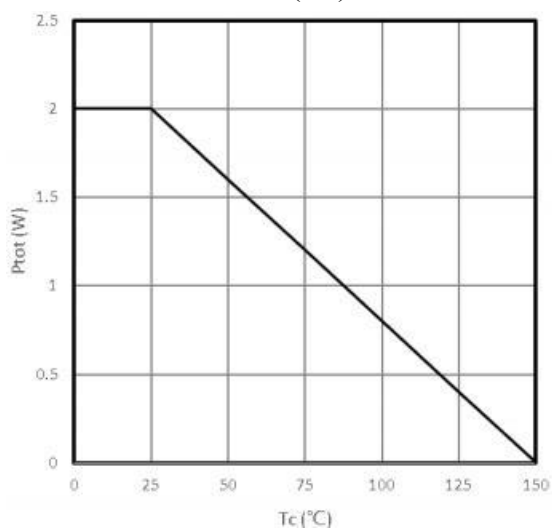
Typ. gate charge
 $V_{GS}=f(Q_g)$; $I_D=2A$



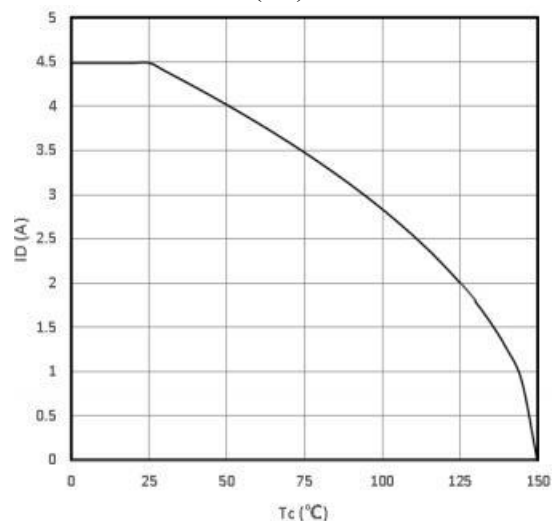
Typ. capacitances
 $C=f(V_{DS})$; $V_{GS}=0V$; $f=1MHz$



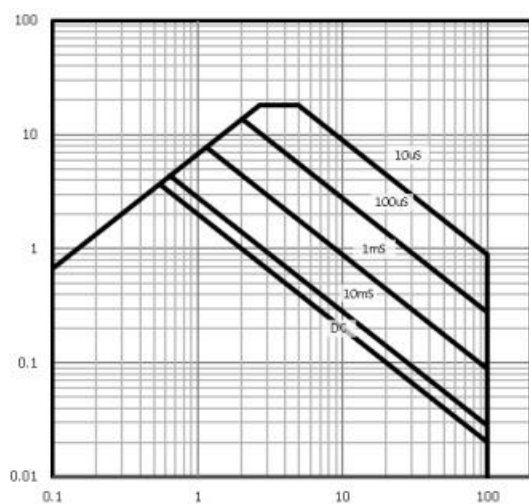
Power Dissipation
 $P_{tot}=f(T_c)$



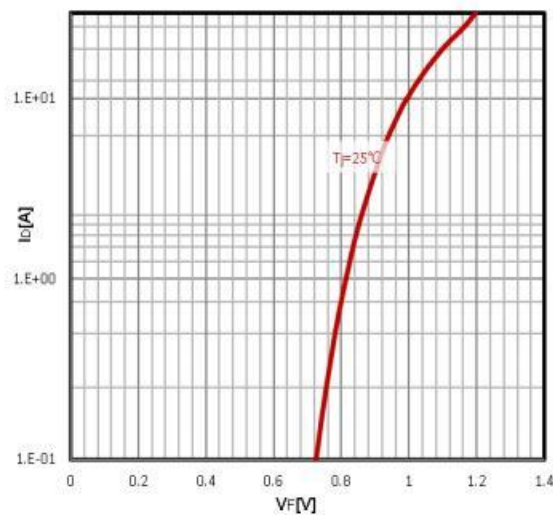
Maximum Drain Current
 $I_D=f(T_c)$



Safe operating area
 $I_D=f(V_{DS})$



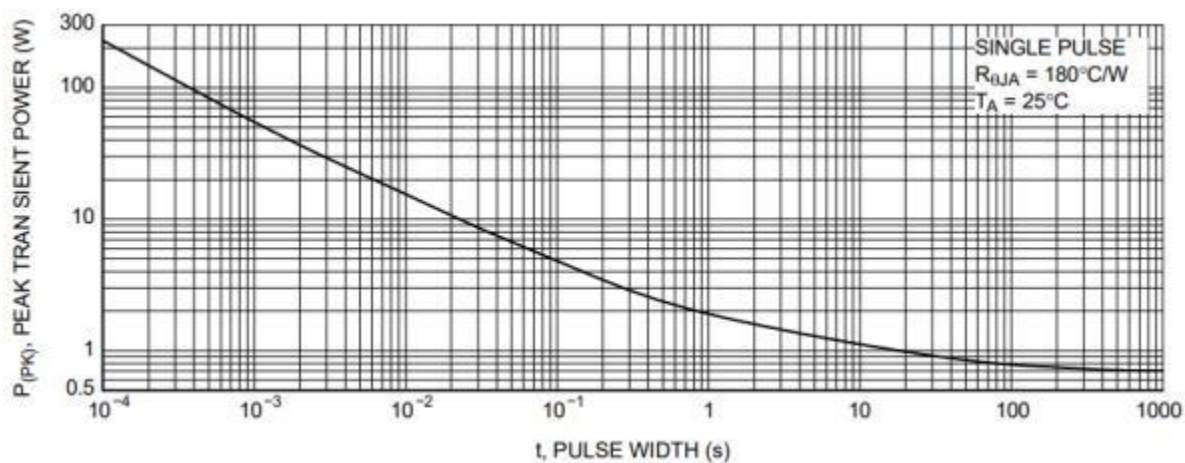
Body Diode Forward Voltage Variation
 $I_F=f(V_{GS})$



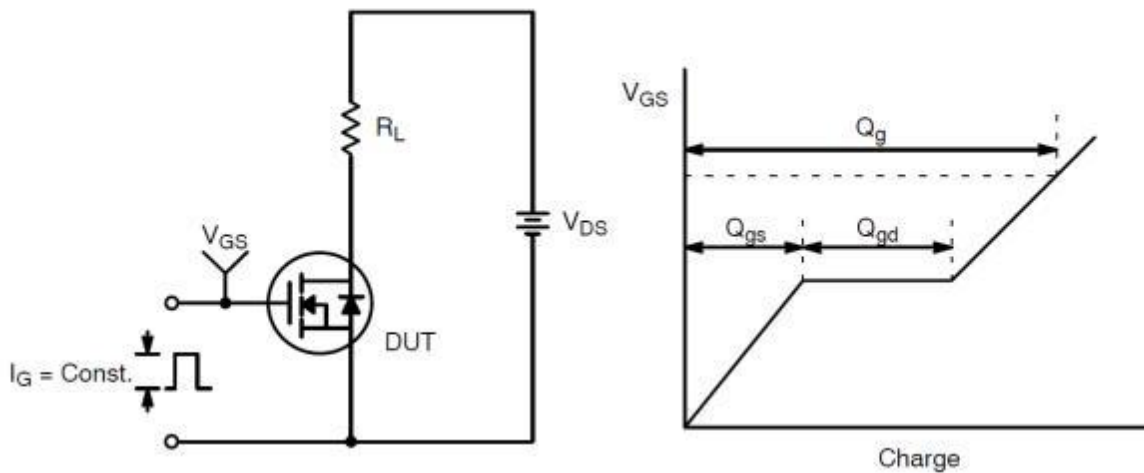
Typical characteristics

Max. transient thermal impedance

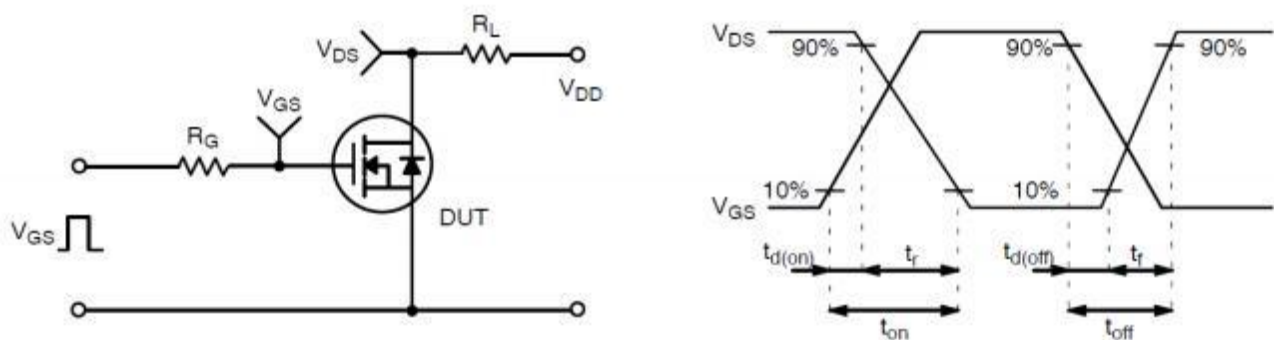
$$Z_{thJC}=f(t_p)$$



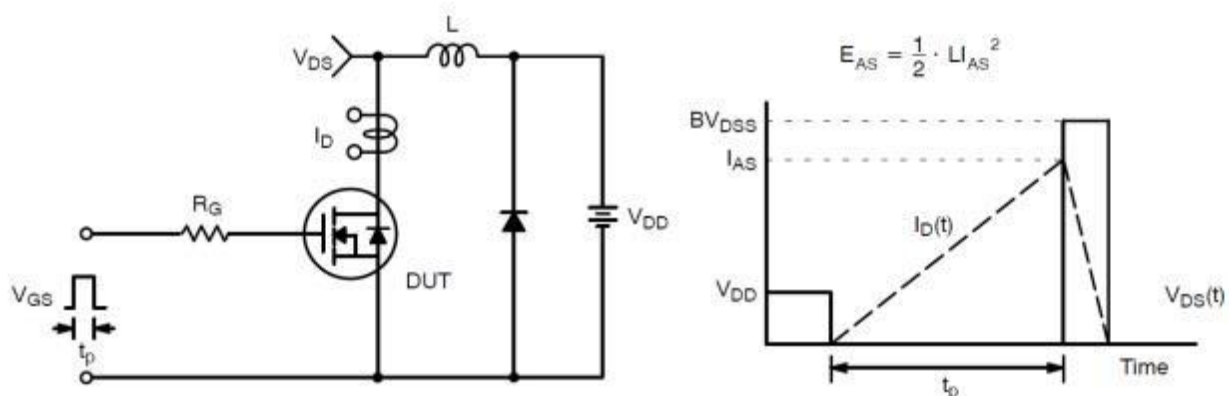
Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

Ordering information

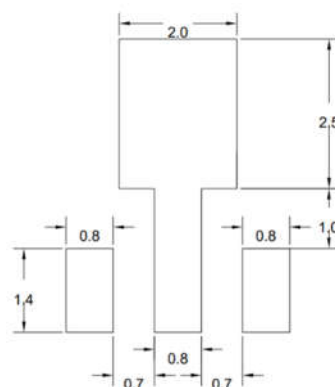
Package	Packing Description	Base Quantity	Packing Quantity
SOT-89	Tape/Reel, 7" reel	1000pcs/Reel	6000PCS/Box 30000PCS/Carton

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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