

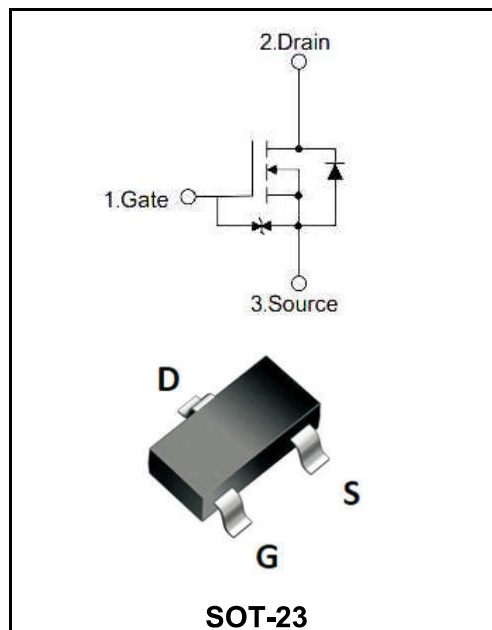
N-Channel Depletion Power MOSFET

MAIN CHARACTERISTICS

I_D	0.03A
V_{DSX}	600V
$R_{DS(on)-typ}(@V_{GS}=10V)$	< 700 Ω (Type:350 Ω)

Features

- ◆Halogen and Antimony Free
- ◆Depletion Mode
- ◆ESD Improved Capability



Marking Code

YFWD03N60

605E

Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSX}	600	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	0.03	A
Continuous Drain Current $T_c=70^\circ\text{C}$		0.024	
Pulsed Drain Current		0.12	
Power Dissipation	P_D	0.5	W
Gate Source ESD (HBM-C=100pF, R=1.5k Ω)	$V_{ESD(G-S)}$	300	V
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to 150	$^\circ\text{C}$
Thermal Characteristics			
Parameter	Symbol	Typ.	Units
Maximum Junction-to-Ambient	$R_{\theta JA}$	250	$^\circ\text{C/W}$

Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
OFF Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSX}$	$V_{GS} = -5V, I_D = 250\mu A$	600	-	-	V
Gate Leakage Current	I_{GSS}	$V_{GS} = \pm 10V$	-	-	± 100	nA
Off-state Drain to Source Current	$I_{D(off)}$	$V_{DS} = 600V, V_{GS} = -5V$	-	-	0.1	μA
		$V_{DS} = 480V, V_{GS} = -5V, T_a = 125^{\circ}C$	-	-	10	μA
ON Characteristics						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = 3V, I_D = 8\mu A$	-2.7	-1.8	-1	V
On-state drain current	I_{DSS}	$V_{GS} = 0V, V_{DS} = 25V$	12	-	-	mA
Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 0V, I_D = 3mA$	-	350	700	Ω
		$V_{GS} = 10V, I_D = 16mA$	-	400	800	
Dynamic Characteristics						
Forward transconductance	g_{fs}	$V_{DS} = 50V, I_D = 0.01A$	8	17	-	mS
Input Capacitance	C_{iss}	$V_{DS} = 25V,$ $V_{GS} = -5V,$ $f = 1MHz$	-	50	-	pF
Output Capacitance	C_{oss}		-	4.53	-	
Reverse Transfer Capacitance	C_{rss}		-	1.08	-	
Switching Characteristics						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 300V, V_{GS} = -5 \dots 7V$ $R_G = 6\Omega, I_D = 0.01A$	-	9.9	-	ns
Turn-On Rise Time	t_r		-	55.8	-	
Turn-Off DelayTime	$t_{d(off)}$		-	56.4	-	
Turn-Off FallTime	t_f		-	136	-	
Total Gate Charge	Q_g	$V_{DD} = 400V, V_{GS} = -5V \text{ to } 5V,$ $I_D = 0.01A$	-	1.14	-	nC
Gate-Source Charge	Q_{gs}		-	0.5	-	
Gate-Drain Charge	Q_{gd}		-	0.37	-	
Drain-source Diode Characteristics						
Diode Forward Current	I_S	$T_a = 25$	-	-	0.025	A
Pulse Diode Forward Current	I_{SM}		-	-	0.1	A
Forward Diode Voltage	V_{SD}	$V_{GS} = -5V, I_F = 16mA$	-	-	1.2	V
Gate-source Zener diode						
Gate-source breakdown voltage	V_{GSO}	$I_{GS} = \pm 1mA$ (Open Drain)	20	-	-	V

Ratings and Characteristic Curves

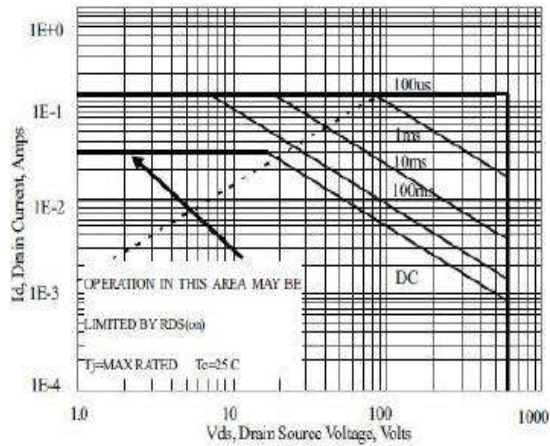


Figure 1 Maximum Forward Bias Safe Operating Area

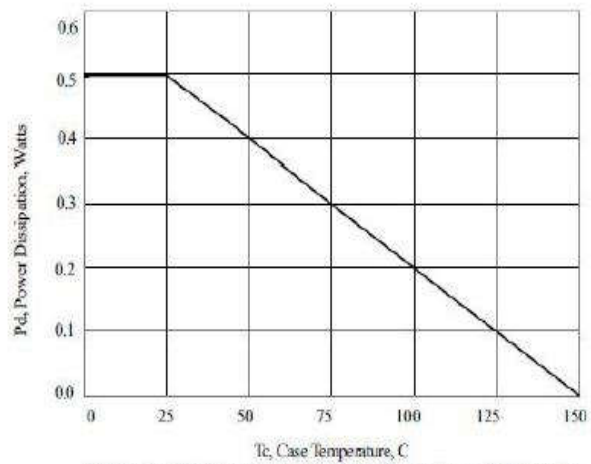


Figure 2 Maximum Power Dissipation vs Case Temperature

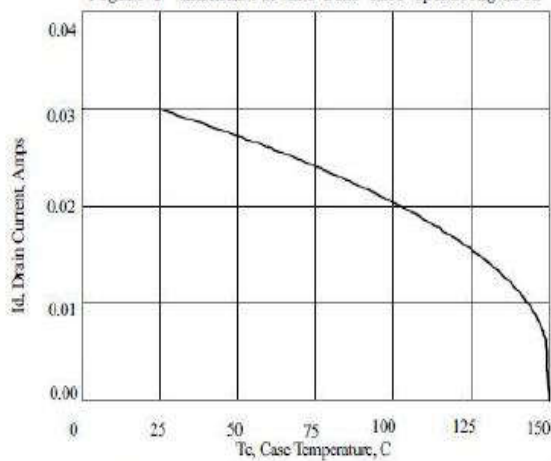


Figure 3 Maximum Continuous Drain Current vs Case Temperature

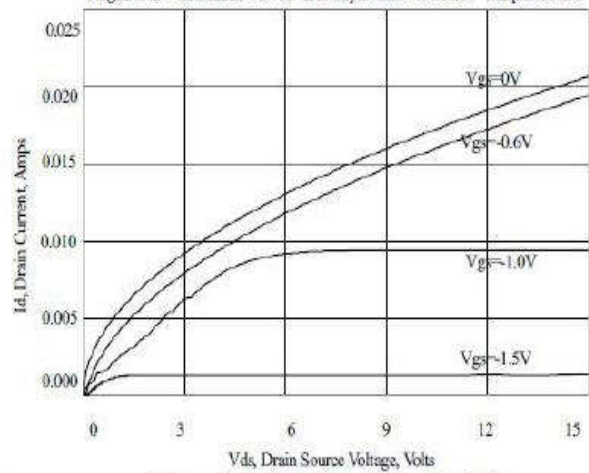


Figure 4 Typical Output Characteristics

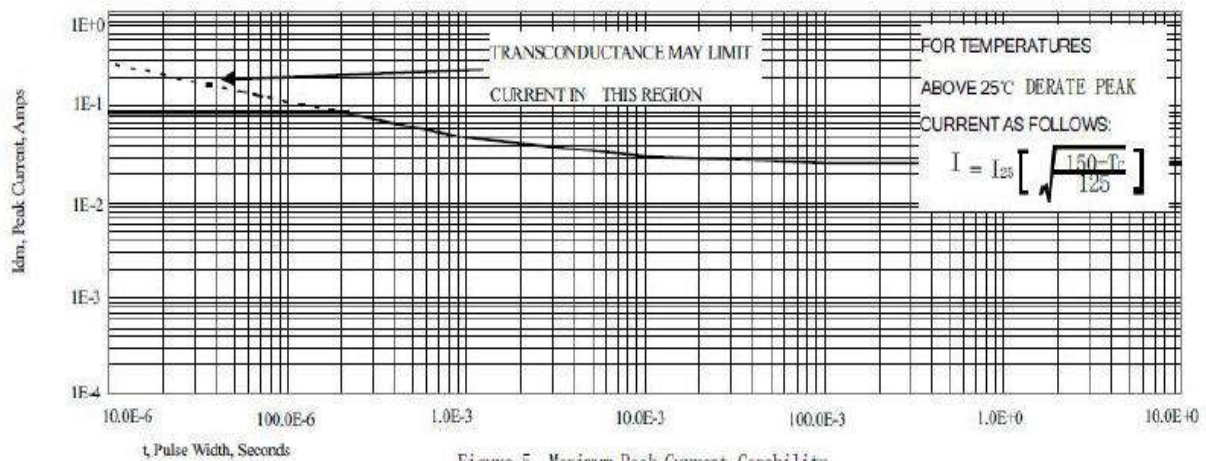


Figure 5 Maximum Peak Current Capability

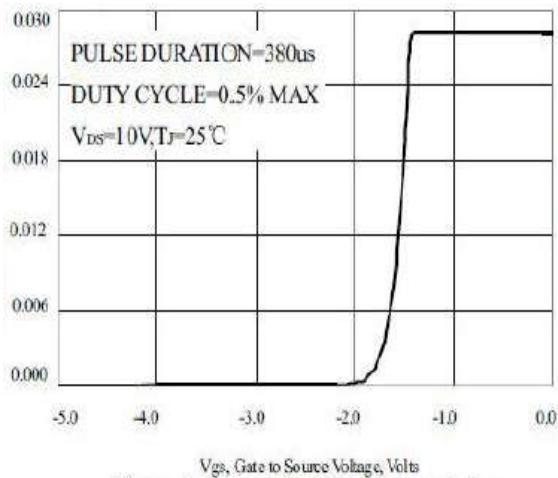


Figure 6 Typical Transfer Characteristics

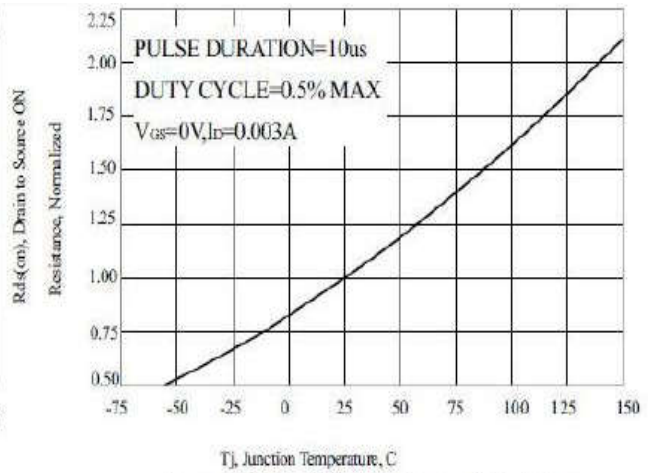


Figure 7 Typical Drain to Source ON Resistance vs Junction Temperature

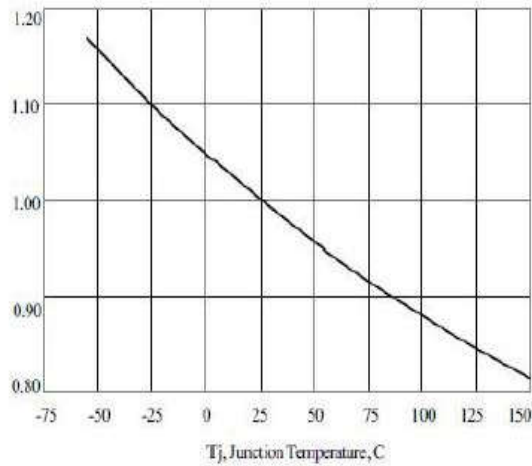


Figure 8 Typical Threshold Voltage vs Junction Temperature

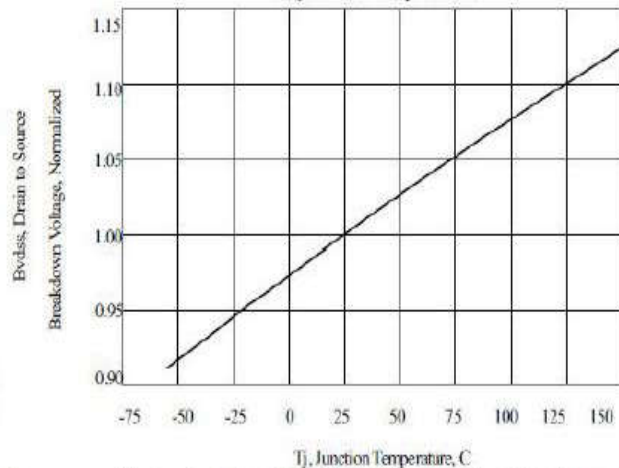


Figure 9 Typical Breakdown Voltage vs Junction Temperature

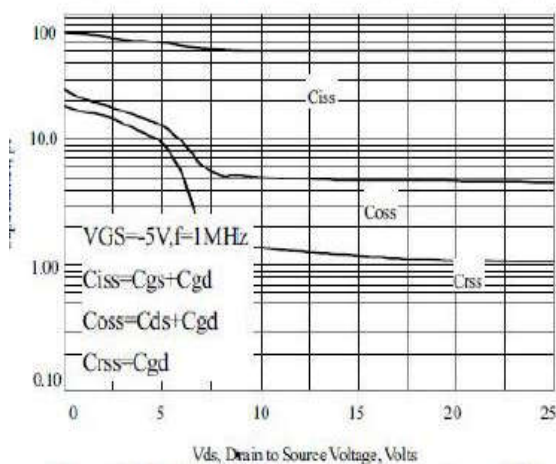


Figure 10 Typical Capacitance vs Drain to Source Voltage

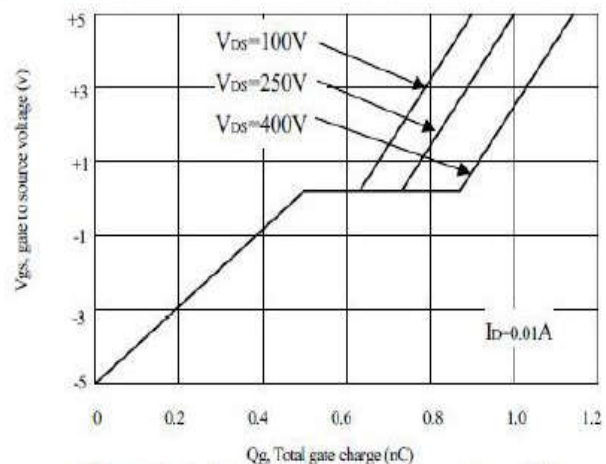
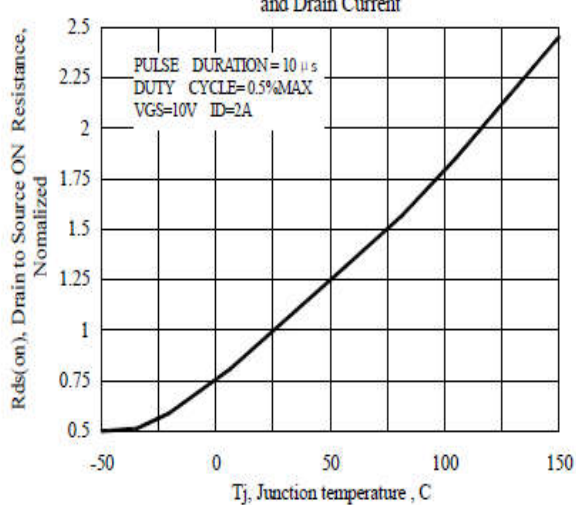
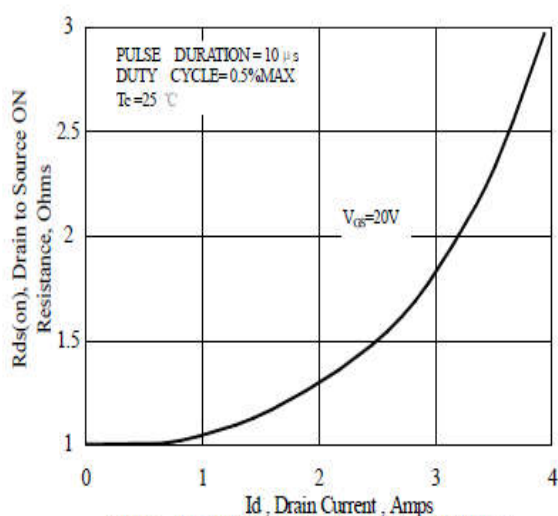
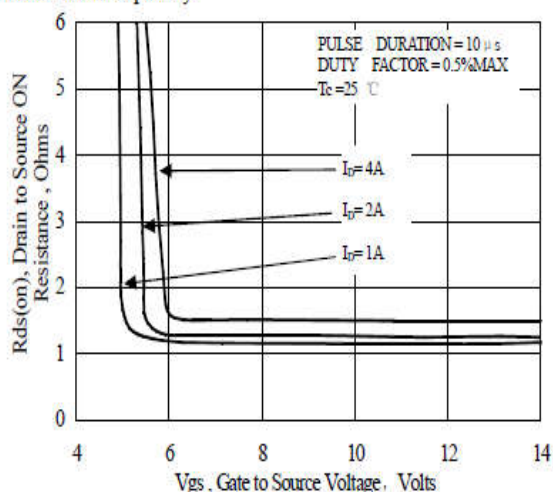
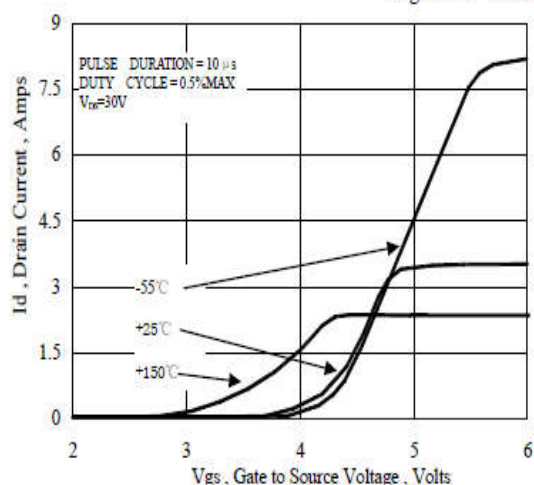
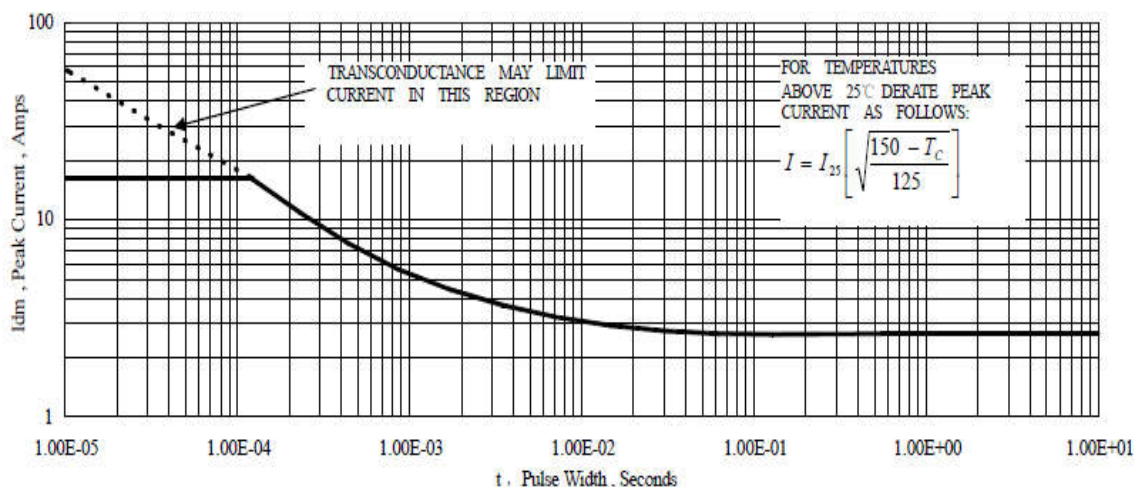


Figure 11 Typical Gate Charge vs Gate to Source Voltage



Ordering information

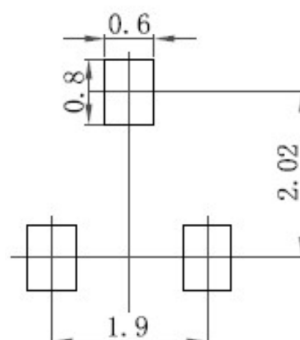
Package	Packing Description	Base Quantity	Packing Quantity
SOT-23	Tape/Reel, 7" reel	3000pcs/Reel	24000PCS/Box 120000PCS/Carton

Package Dimensions

SOT-23

Dim.	Millimeter (mm)		mil	
	Min.	Max.	Min.	Max.
A	0.9	1.15	35	45
A1	0.1		3.9	
bp	0.38	0.48	15	19
C	0.09	0.15	3.54	5.9
D	2.8	3.0	110	118
E	1.2	1.4	47	55
E	1.9		75	
E1	0.95		37	
HE	2.1	2.55	83	100
Lp	0.15	0.45	5.9	18
Q	0.45	0.55	18	22
v	0.2		7.9	
W	0.1		4	

The recommended mounting pad size



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