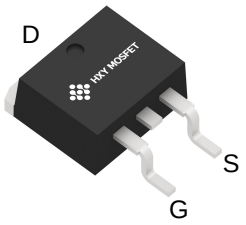
Description

The STD12NF06T4 can be used in various power swithching circuit for system miniaturization and higher efficiency.The package form is TO-263, which accords with the RoHS standard.



TO-263
(D2PAK)

General Features

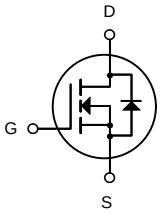
V_{DS} = 60V I_D = 90A

$R_{DS(ON)}$ < 7.5mΩ@ V_{GS}=10V

Application

Switching application

Power Management for Inverter Systems.



N-Channel MOSFET

Ordering Information

Product ID	Pack	Brand	Units/Tube)
STD12NF06T4	TO-263(D2PAK)	HXY MOSFET	50

Absolute Maximum Ratings (T_C=25°C unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current-Continuous	90	A
I_D (100°C)	Drain Current-Continuous(T_C=100°C)	51	A
I_{DM}	Pulsed Drain Current	320	A
P_D	Maximum Power Dissipation	83	W
E_{AS}	Repetitive Avalanche Energy	244	mJ
T_J,T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	℃
$R_{\theta JC}$	Thermal Resistance,Junction-to-Case	1.5	℃/W

Electrical Characteristics@ T_J = 25°C (unless otherwise specified)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	60	---	---	V
I_{DSS}	ZeroGateVoltageDrainCurrent	V_{GS}=0V, V_{DS}=60V	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	2	2.8	4	V
$R_{DS(ON)}$	Drain-SourceOnResistance	V_{GS}=10V,I_D=20A	---	5.8	7.5	mΩ
C_{iss}	Input Capacitance	V_{DS}=30V, V_{GS}=0V, f=1MHz	---	4008	---	pF
C_{oss}	Output Capacitance		---	242	--	
C_{rss}	Reverse Transfer Capacitance		---	200	---	
$t_{d(on)}$	Turn-On Delay Time	V_{DS}=30V, I_D=20A, R_{ENG}=3Ω,V_{GS}=10V	---	18	---	ns
t_r	Rise Time		---	41	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	47	---	ns
t_f	Fall Time		---	28	---	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=30V, I_D=20A	---	75	---	nc
Q_{gs}	Gate-Source Charge		---	18	---	nc
Q_{gd}	Gate-Drain “Miller” Charge		---	4.2	---	nc
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_{SD}=20A	---	---	1.2	V
I_S	Continuous Drain Curren	VD=VG=0V	---	---	90	A
I_{SM}	Pulsed Drain Current		---	---	320	A
Trr	Reverse Recovery Time	I_F=20A,T_J=25℃ dI/dt=100A/us	---	28	---	ns
Qrr	Reverse Recovery Charge		---	52	---	nc

Notes:

1. L=0.5mH, V_{DD}=30V, Start T_J=25℃.
2. Limited by maximum junction temperature.
3. Repetitive Rating: Pulse width limited by maximum junction temperature.

Typical Characteristics

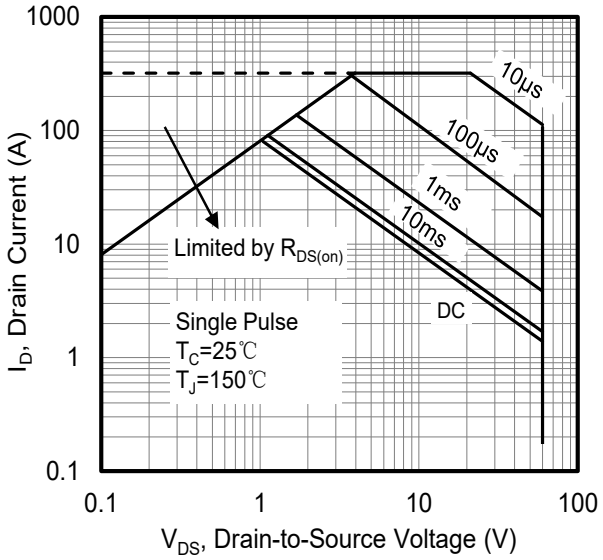


Figure 1. Maximum Safe Operating Area

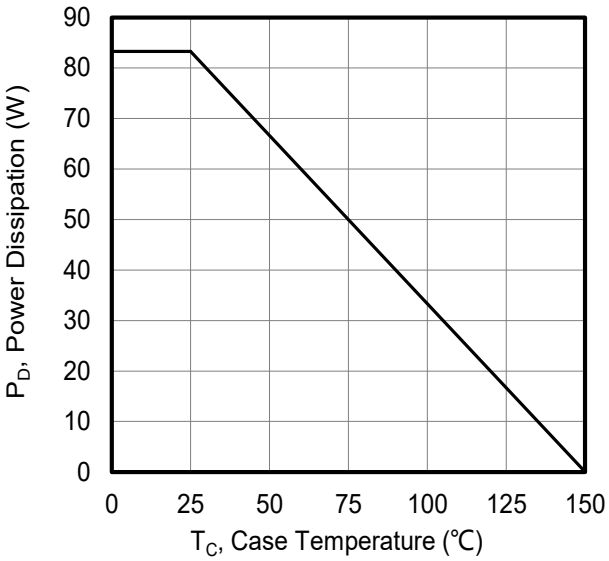


Figure 2. Maximum Power Dissipation vs Case Temperature

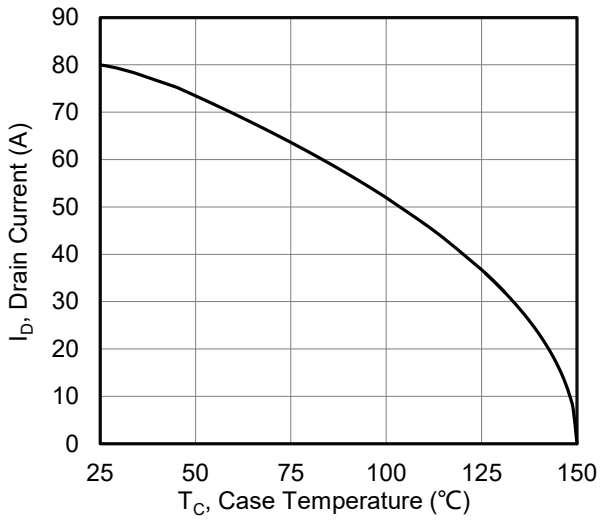


Figure 3. Maximum Continuous Drain Current vs Case Temperature

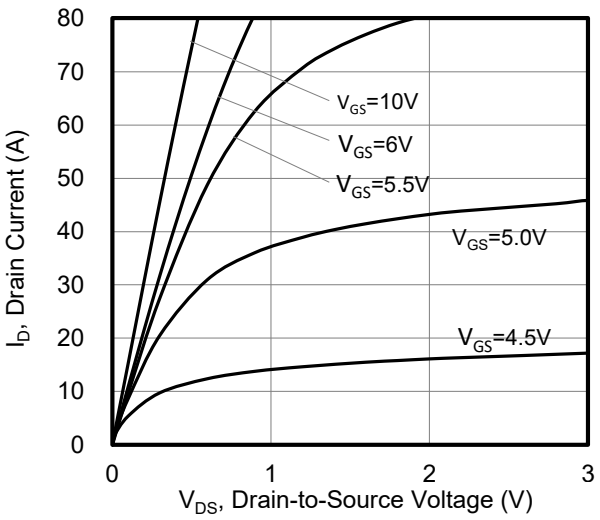


Figure 4. Typical output Characteristics

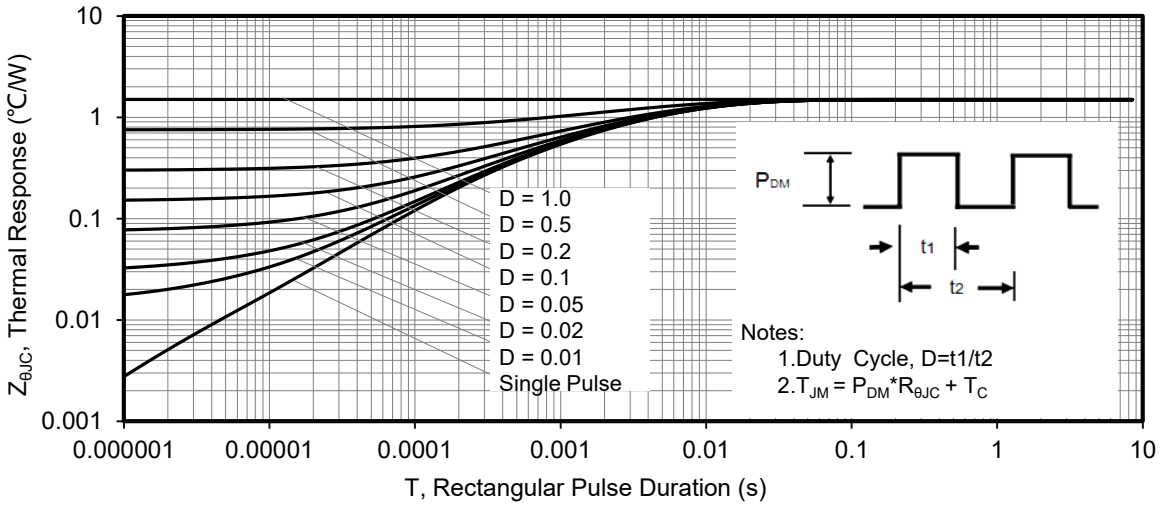


Figure 5. Maximum Effective Thermal Impedance, Junction to Case

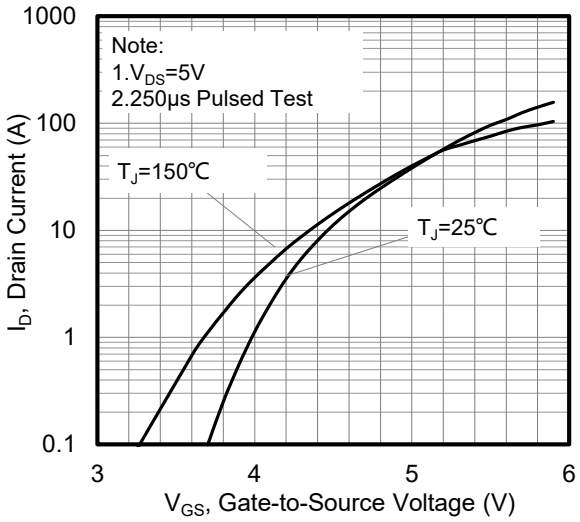


Figure 6. Typical Transfer Characteristics

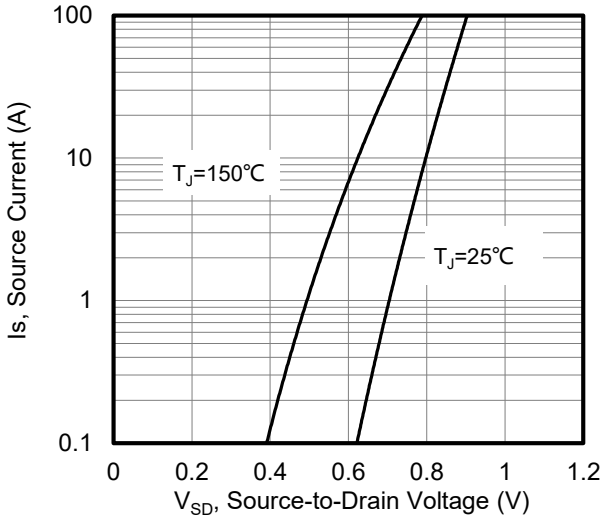


Figure 7. Typical Body Diode Transfer Characteristics

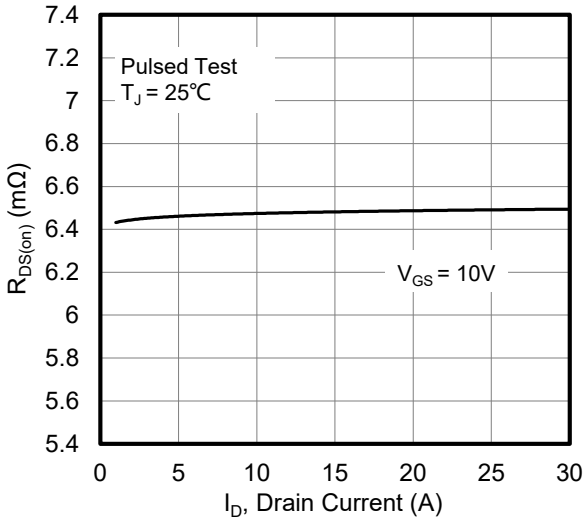


Figure 8. Drain-to-Source On Resistance vs Drain Current

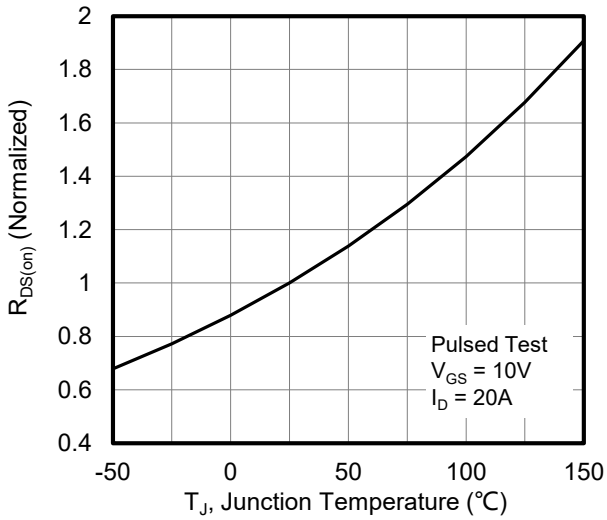


Figure 9. Normalized On Resistance vs Junction Temperature

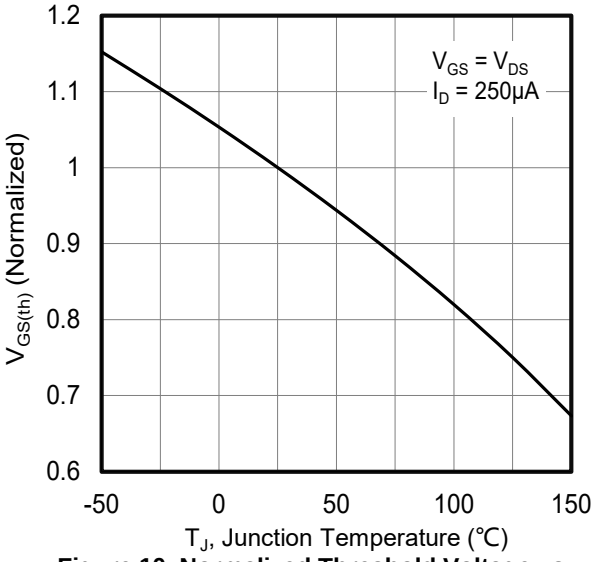


Figure 10. Normalized Threshold Voltage vs Junction Temperature

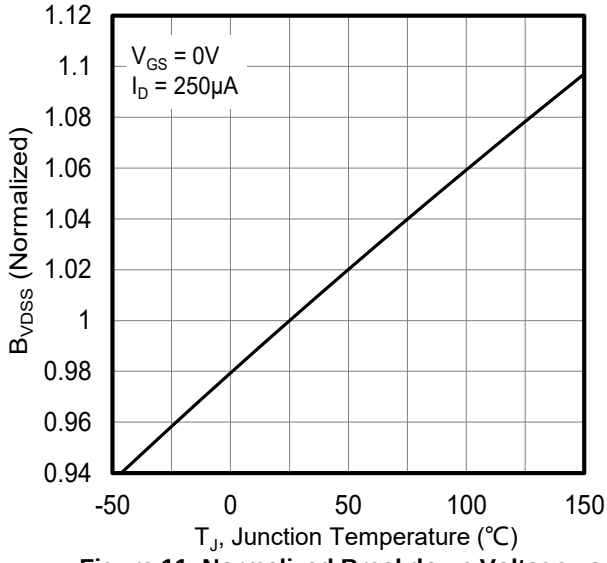


Figure 11. Normalized Breakdown Voltage vs Junction Temperature

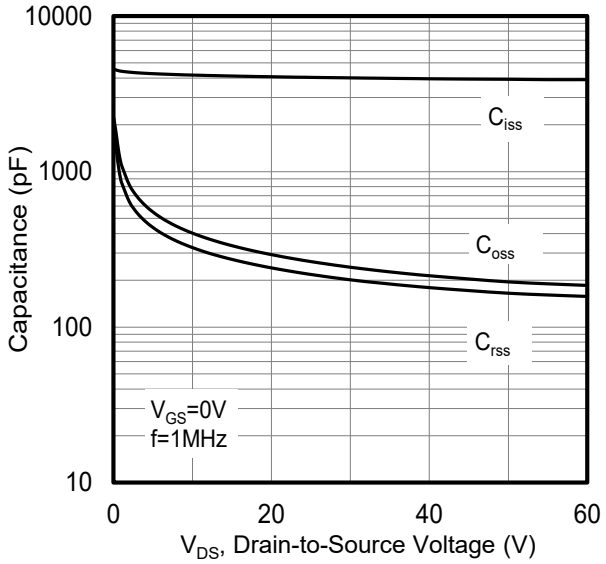


Figure 12. Capacitance Characteristics

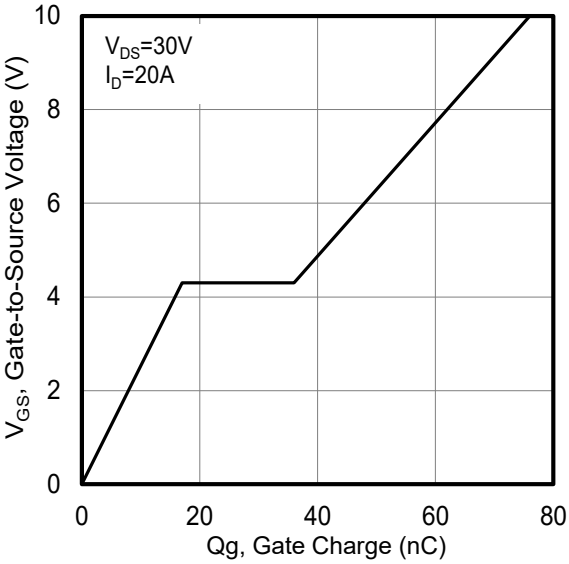
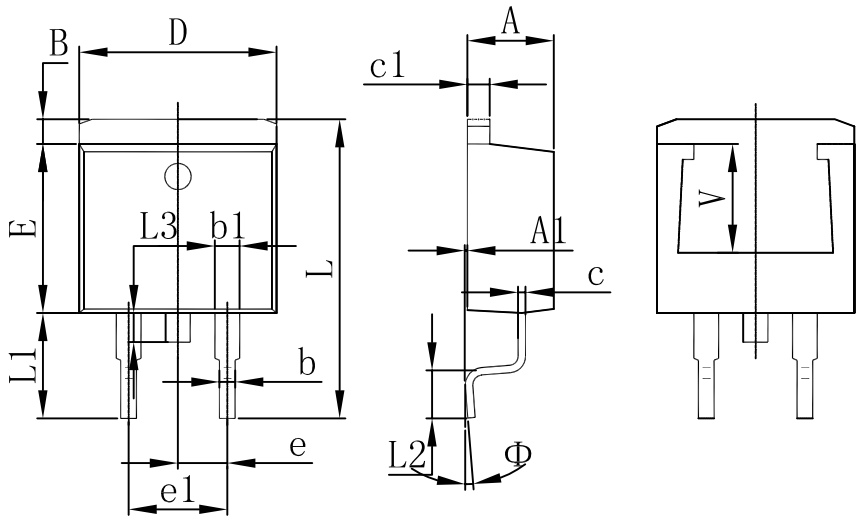


Figure 13. Typical Gate Charge vs Gate to Source Voltage

TO-263(D2PAK)Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
Φ	0°	8°	0°	8°
V	5.600 REF.		0.220REF.	

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