

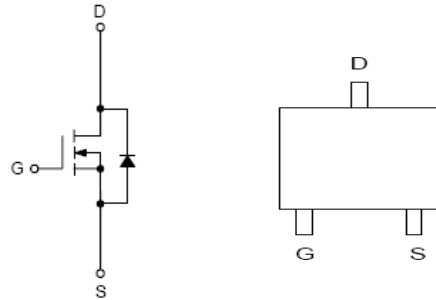


N-Channel Enhancement Mode Field Effect Transistor

● **Features**

30V/5A
 $R_{DS(ON)}=26m\Omega$ (typ.) @ $V_{GS}=10V$
 $R_{DS(ON)}=37m\Omega$ (typ.) @ $V_{GS}=4.5V$
 SOT-23-3L Package

● **Pin Configurations**



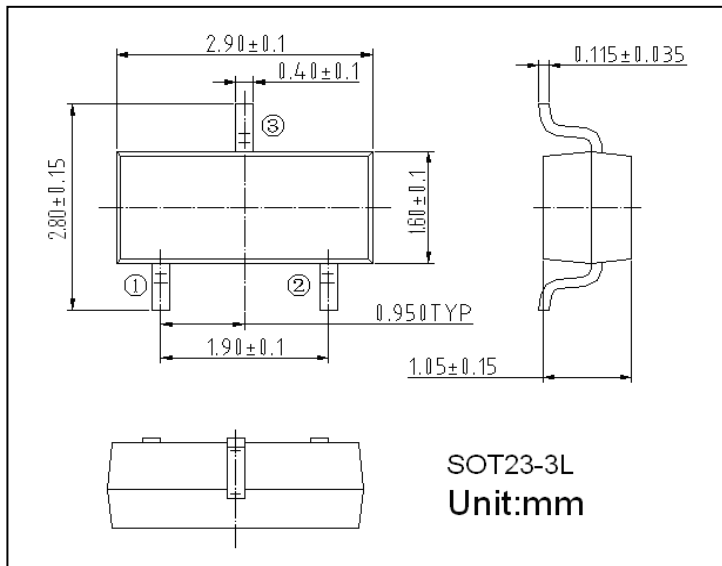
N-Channel MOSFET

● **General Description**

The HX3404 uses advanced trench technology to provide excellent $R_{DS(ON)}$ and low gate charge. This device is suitable for use as a load switch or in PWM applications.

-RoHS Compliant

● **Package Information**



● **Absolute Maximum Ratings @ $T_A=25^\circ C$ unless otherwise noted**

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DSS}	30	V
Gate-Source Voltage		V_{GSS}	± 20	V
Drain Current (Continuous)	$T_A=25^\circ C$	I_D	5	A
	$T_A=70^\circ C$		4.1	
Drain Current (Pulse)		I_{DM}	20	A
Power Dissipation	$T_A=25^\circ C$	P_D	1.4	W



	$T_A=70^{\circ}\text{C}$		1	
Operating Temperature/ Storage Temperature		$T_{\text{J}}/T_{\text{STG}}$	-55~150	$^{\circ}\text{C}$

● **Electrical Characteristics** @ $T_A=25^{\circ}\text{C}$ unless otherwise noted

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$V_{\text{GS}} = 0\text{V}, I_{\text{D}}=250\mu\text{A}$	30	34	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{\text{DS}} = 24\text{V}, V_{\text{GS}} = 0\text{V}$	--	--	1	μA
Gate Threshold Voltage	$V_{\text{GS(th)}}$	$V_{\text{GS}} = V_{\text{DS}}, I_{\text{D}}=250\mu\text{A}$	1	1.4	2	V
Gate Leakage Current	I_{GSS}	$V_{\text{GS}}=\pm 20\text{V}, V_{\text{DS}}=0\text{V}$	--	--	100	nA
Drain-Source On-state Resistance	$R_{\text{DS(on)}}$	$V_{\text{GS}} = 10\text{V}, I_{\text{D}}=5.8\text{A}$	--	26	31.5	$\text{m}\Omega$
		$V_{\text{GS}} = 4.5\text{V}, I_{\text{D}}=5\text{A}$	--	37	44	$\text{m}\Omega$
Forward Transconductance	g_{FS}	$V_{\text{DS}}=5\text{V}, I_{\text{D}}=5\text{A}$	--	15	--	S
Diode Forward Voltage	V_{SD}	$I_{\text{SD}}=1\text{A}, V_{\text{GS}}=0\text{V}$	--	0.77	1.0	V
Maximum Body-Diode Continuous Current	I_{S}		--	--	3	A
Switching						
Total Gate Charge	Q_{g}	$V_{\text{GS}}=10\text{V}, V_{\text{DS}}=15\text{V}, I_{\text{D}}=5\text{A}$	--	7.6	9.9	nC
Gate-Source Charge	Q_{gs}		--	1.3	1.7	nC
Gate-Drain Charge	Q_{gd}		--	1.7	2.2	nC
Turn-on Delay Time	$t_{\text{d(on)}}$	$V_{\text{GS}}=10\text{V}, V_{\text{DD}}=15\text{V}, I_{\text{D}}=1\text{A}$ $R_{\text{L}}=15\Omega, R_{\text{G}}=6\Omega$	--	10.1	20.3	ns
Turn-on Rise Time	T_{r}		--	3.2	6.3	ns
Turn-off Delay Time	$t_{\text{d(off)}}$		--	22.2	44.4	ns
Turn-off Fall Time	T_{f}		--	3	6	ns
Dynamic						
Input Capacitance	C_{iss}	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=15\text{V}, f=1.0\text{MHz}$	--	391	--	pF
Output Capacitance	C_{oss}		--	86.2	--	pF
Reverse Transfer Capacitance	C_{rss}		--	59.4	--	pF
Gate resistance	R_{g}	$V_{\text{GS}}=0\text{V}, V_{\text{DS}}=0\text{V}, f=1\text{MHz}$	--	1.4	2	Ω



● Typical Performance Characteristics

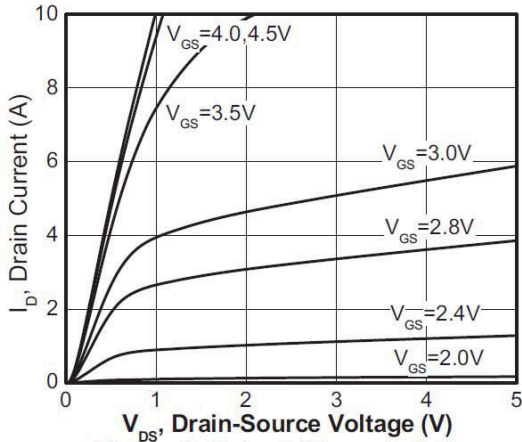


Figure 1. Output Characteristics

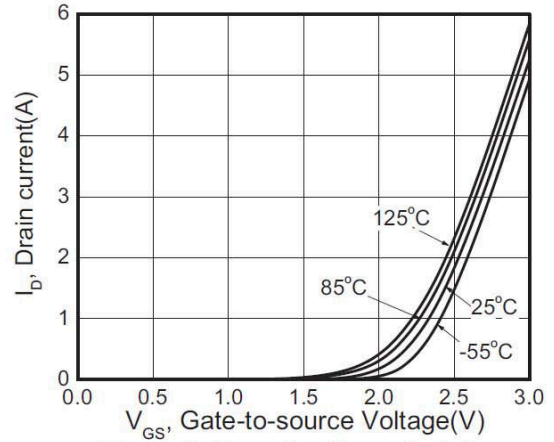


Figure 2. Transfer Characteristics

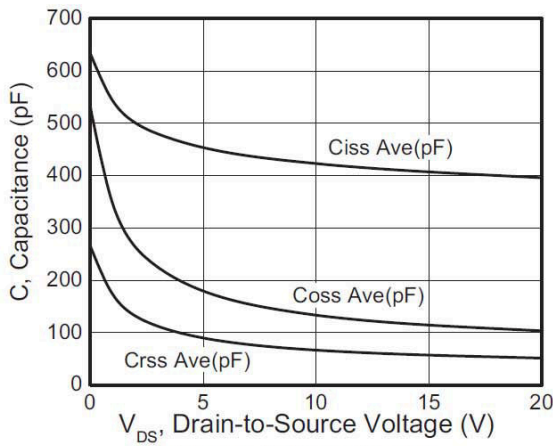


Figure 3. Capacitance

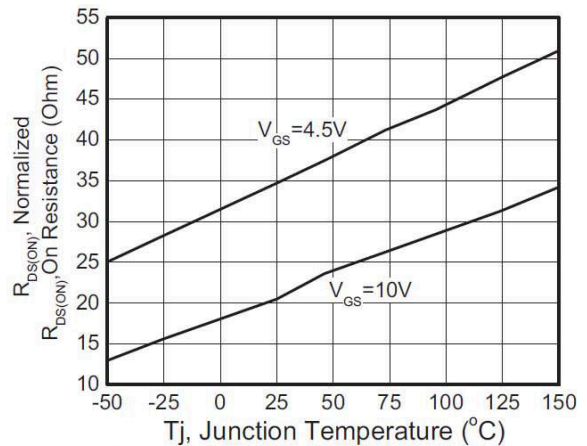


Figure 4. On Resistance Vs. Temperature

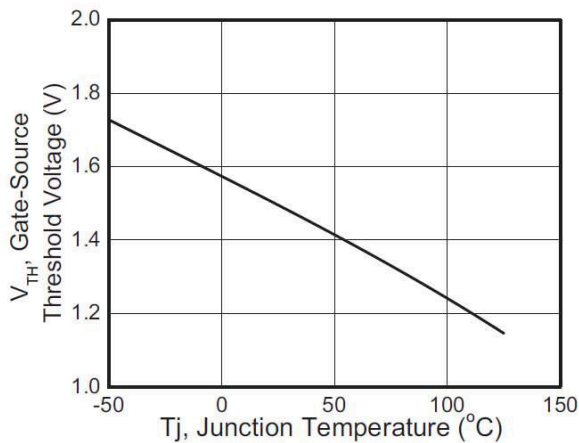


Figure 5. Gate Threshold Vs. Temperature

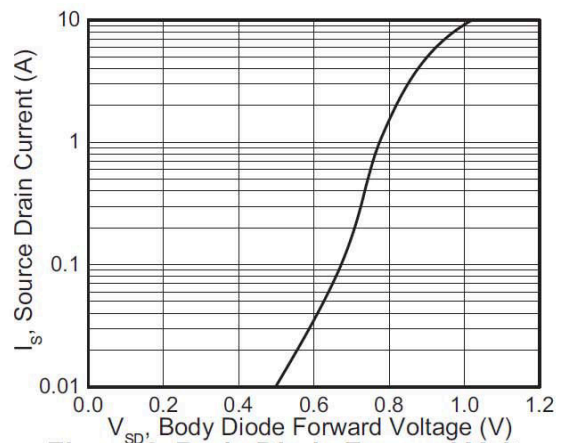


Figure 6. Body Diode Forward Voltage Vs. Source Current



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