

General Description :

The 2300K uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. The package form is SOT-23, which accords with the RoHS standard.

Features :

$R_{DS(ON)} < 115\text{m}\Omega @ V_{GS}=2.5\text{V}$

High density cell design for ultra low R_{dson}

Fully characterized avalanche voltage and current

Excellent package for good heat dissipation

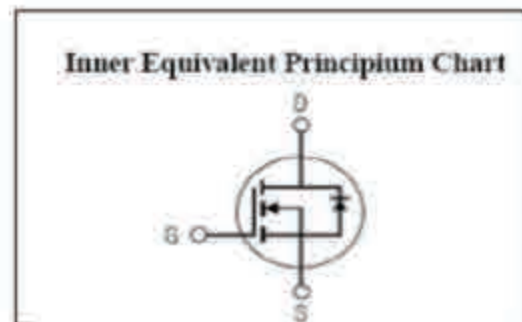
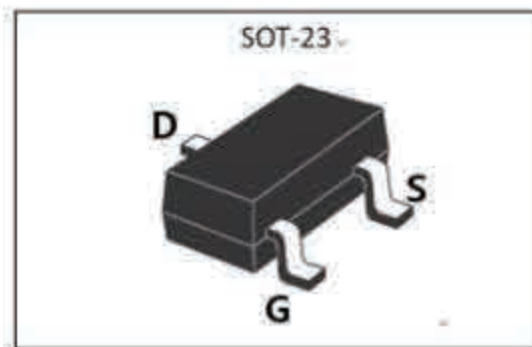
Applications :

Power switching application

Hard switched and high frequency circuits

Uninterruptible power supply

V_{DSS}	20	V
I_D	2.8	A
P_D	0.4	W
$R_{DS(ON)MAX}$	115	$\text{m}\Omega$



Absolute ($T_c = 25^\circ\text{C}$ unless otherwise specified) :

Symbol	Parameter	Rating	Units
V_{DS}	Drain-to-Source Voltage	20	V
I_D	Continuous Drain Current	2.8	A
I_{DM}	Pulsed Drain Current	10	A
V_{GS}	Gate-to-Source Voltage	± 8	V
P_D	Power Dissipation	0.4	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	$^\circ\text{C}$

Symbol	Parameter	Typ.	Units
$R_{\theta JA}$	Junction-to-Ambient ^{a2}	357	$^\circ\text{C/W}$

Electrical Characteristics ($T_c = 25^\circ\text{C}$ unless otherwise specified) :

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating	Units		
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	20	--	--	V
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=20V, V_{GS}=0V, T_a=25^\circ\text{C}$	--	--	1.0	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+8V$	--	--	0.1	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-8V$	--	--	-0.1	μA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating	Units		
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	$V_{GS}=4.5V, I_D=3.6A$	--	45	60	$m\Omega$
		$V_{GS}=2.5V, I_D=3.1A$		70	115	$m\Omega$
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=50\mu A$	0.65	--	1.2	V
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

Dynamic Characteristics ^{a4}						
Symbol	Parameter	Test Conditions	Rating	Units		
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=3.6A$	--	8	--	S
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=10V$ $f=1.0MHz$	--	300	--	pF
C_{oss}	Output Capacitance		--	120	--	
C_{rss}	Reverse Transfer Capacitance		--	80	--	

Resistive Switching Characteristics ^{a4}						
Symbol	Parameter	Test Conditions	Rating	Units		
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$V_{DD}=-10V, R_L=5.5\Omega, I_D=3.6A$ $V_{GS}=4.5V, R_G=6\Omega$	--	7	--	ns
t_r	Rise Time		--	55	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	16	--	
t_f	Fall Time		--	10	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating	Units		
			Min.	Typ.	Max.	
V_{SD}	Diode Forward Voltage ^{a3}	$I_S=0.7A, V_{GS}=0V$	--	--	1.2	V

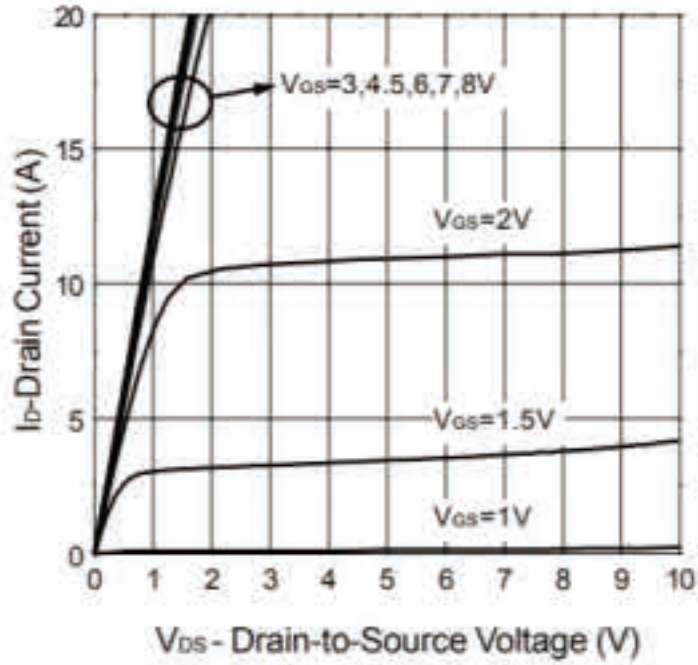
^{a1}: Repetitive Rating: Pulse width limited by maximum junction temperature.

^{a2}: Surface Mounted on FR4 Board, $t \leq 10\text{sec}$.

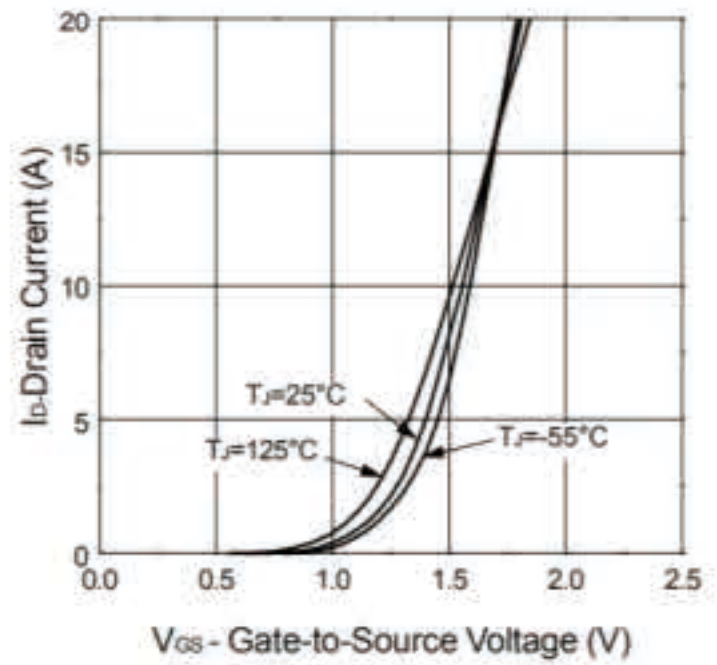
^{a3}: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Typical Characteristics

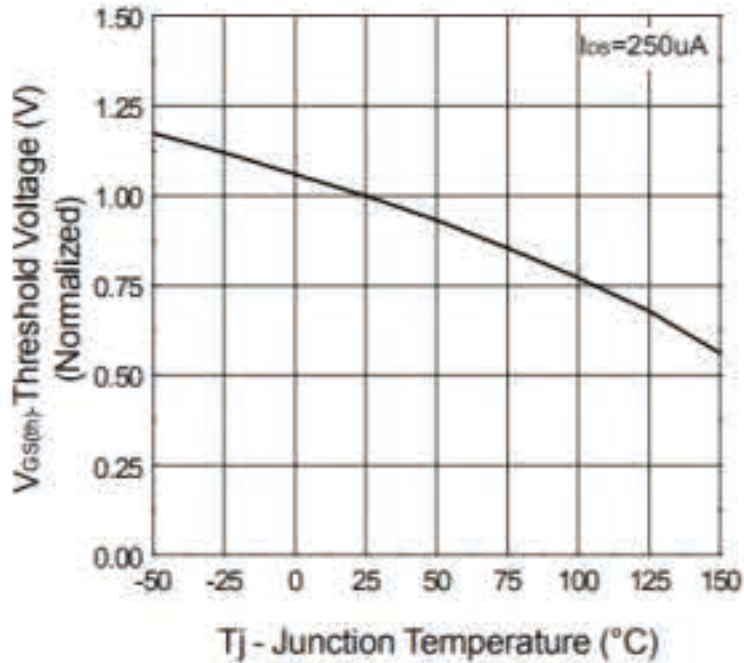
Output Characteristics



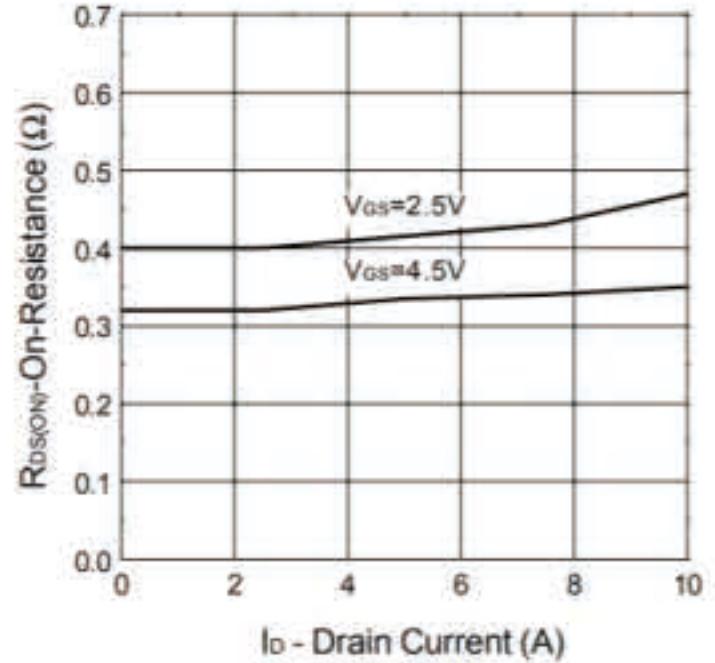
Transfer Characteristics



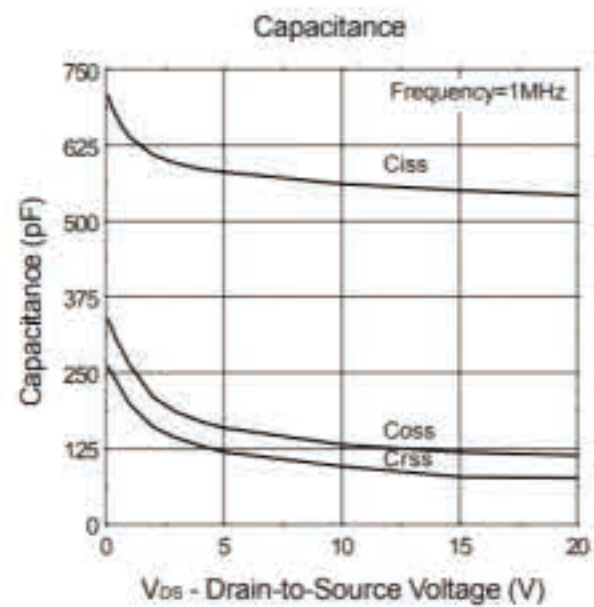
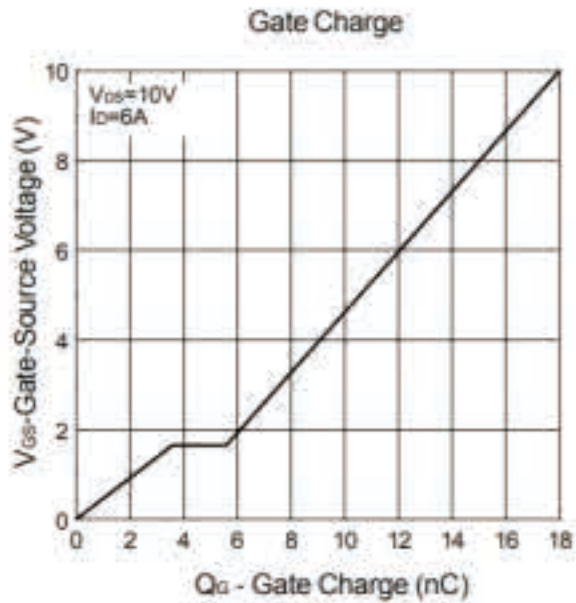
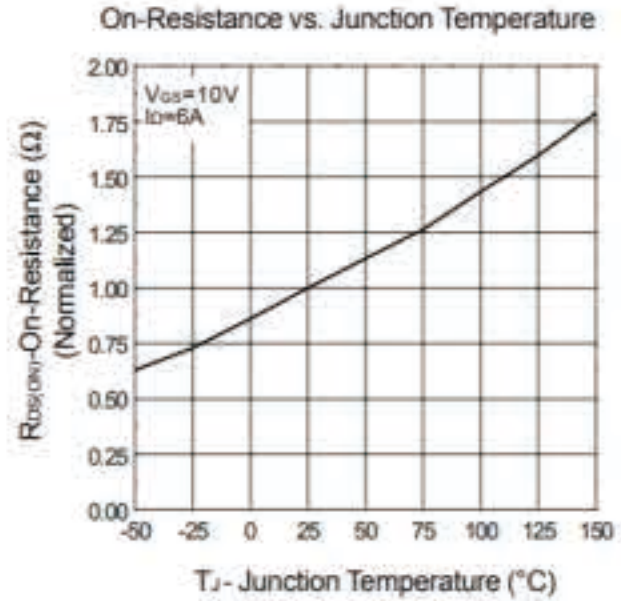
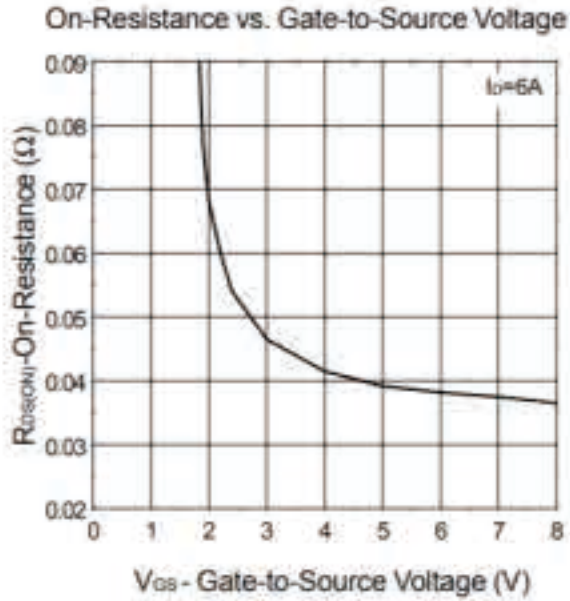
Threshold Voltage vs. Junction Temperature



On-Resistance vs. Drain Current



Typical Characteristics (Cont.)



Typical Characteristics (Cont.)

