

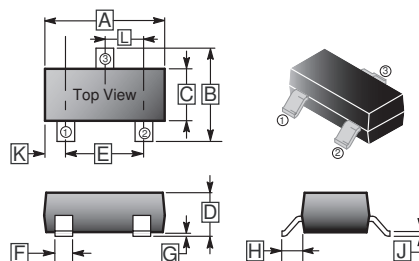
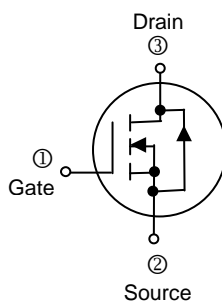
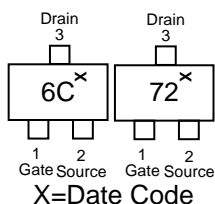
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

FEATURES

- ◆ Low on-resistance
- ◆ Low gate threshold voltage
- ◆ Low input capacitance
- ◆ Fast switching speed
- ◆ Low input/output leakage
- ◆ Ultra-small surface mount package

SOT-323

PACKAGE INFORMATION



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	1.80	2.20	G	0.00	0.10
B	2.00	2.40	H	0.425	REF.
C	1.15	1.35	J	0.10	0.25
D	0.80	1.00	K	-	-
E	1.20	1.40	L	0.650	TYP.
F	0.30	0.40			

ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Drain-Source Voltage	V_{DDS}	60	Vdc
Drain-Gate Voltage($R_{GS}=1.0M\Omega$)	V_{DGR}	60	Vdc
Continuous Drain Current ¹ ($T_A=25^\circ C$)	I_D	± 115	mAdc
Continuous Drain Current ¹ ($T_A=100^\circ C$)		± 75	
Pulsed Drain Current ²		± 800	
Continuous Gate-Source Voltage	V_{GS}	± 20	Vdc
Non-repetitive Gate-Source Voltage($t_p \leq 50\mu s$)	V_{GSM}	± 40	Vpk
THERMAL CHARACTERISTICS			
Total Device Dissipation FR-5 Board ³ ($T_A=25^\circ C$)	P_D	225	mW
Derating above 25°C		1.8	mW/°C
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	°C/W
Junction and Storage Temperature	T_J, T_{STG}	-55~150	°C

Notes:

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2.0\%$
3. FR-5=1.0*0.75*0.62 in.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise specified)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
OFF CHARACTERISTICS						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	60	-	-	Vdc	$V_{GS} = 0, I_D = 10\mu\text{Adc}$
Zero Gate Voltage Drain Current	I_{DSS}	$T_J = 25^\circ\text{C}$	-	-	1.0	μAdc $V_{GS}=0, V_{DS} = 60\text{Vdc}$
		$T_J = 125^\circ\text{C}$	-	-	500	
Gate-Body Leakage Current, Forward	I_{GSSF}	-	-	100	nAdc	$V_{GS}=20\text{Vdc}$
Gate-Body Leakage Current, Reverse	I_{GSSR}	-	-	-100	nAdc	$V_{GS}=-20\text{Vdc}$
ON CHARACTERISTICS¹						
Gate Threshold Voltage	$V_{GS(th)}$	1.0	1.6	2.5	Vdc	$V_{DS} = V_{GS}, I_D = 250\mu\text{Adc}$
On-State Drain Current	$I_{D(ON)}$	500	-	-	mA	$V_{DS} \geq 2.0V_{DS(ON)}, V_{GS}=10\text{Vdc}$
Static Drain-Source On-State Voltage	$V_{DS(ON)}$	-	-	3.75	Vdc	$V_{GS}=10\text{Vdc}, I_D = 500\text{mAdc}$
		-	-	0.375		$V_{GS}=5\text{Vdc}, I_D = 50\text{mAdc}$
Static Drain-Source On-State Resistance ($T_A=25^\circ\text{C}$)	$r_{DS(ON)}$	-	1.4	7.5	Ω	$V_{GS}=10\text{Vdc}, I_D = 500\text{mAdc}$
		-	1.8	7.5		$V_{GS}=5\text{Vdc}, I_D = 50\text{mAdc}$
Static Drain-Source On-State Resistance ($T_A=125^\circ\text{C}$)	$r_{DS(ON)}$	-	-	13.5	Ω	$V_{GS}=10\text{Vdc}, I_D = 500\text{mAdc}$
		-	-	13.5		$V_{GS}=5\text{Vdc}, I_D = 50\text{mAdc}$
Forward Transconductance	g_{FS}	80	-	-	mmhos	$V_{DS} \geq 2V_{DS(ON)}, I_D = 200\text{mAdc}$
DYNAMIC CHARACTERISTICS						
Input Capacitance	C_{iss}	-	17	50	pF	$V_{DS}=25\text{Vdc}, V_{GS}=0, f=1\text{MHz}$
Output Capacitance	C_{oss}	-	10	25	pF	$V_{DS}=25\text{Vdc}, V_{GS}=0, f=1\text{MHz}$
Reverse Transfer Capacitance	C_{rss}	-	2.5	5.0	pF	$V_{DS}=25\text{Vdc}, V_{GS}=0, f=1\text{MHz}$
SWITCHING CHARACTERISTICS¹						
Turn-On Delay Time	$t_{d(ON)}$	-	7	20	nS	$V_{DD}=25\text{Vdc}, I_D \cong 500\text{mAdc}$ $R_G=25\Omega, R_L=50\Omega, V_{GEN}=10\text{V}$
Turn-Off Delay Time	$t_{d(OFF)}$	-	11	40		
BODY-DRAIN DIODE RATINGS						
Diode Forward On-Voltage	V_{SD}	-	-	-1.5	Vdc	$I_S=11.5\text{mAdc}, V_{GS}=10\text{V}$
Source Current Continuous	I_S	-	-	-115	mAdc	
Source Current Pulsed	I_{SM}	-	-	-800	mAdc	

Notes:

1. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2.0\%$

CHARACTERISTIC CURVE (N-Ch, cont'd)

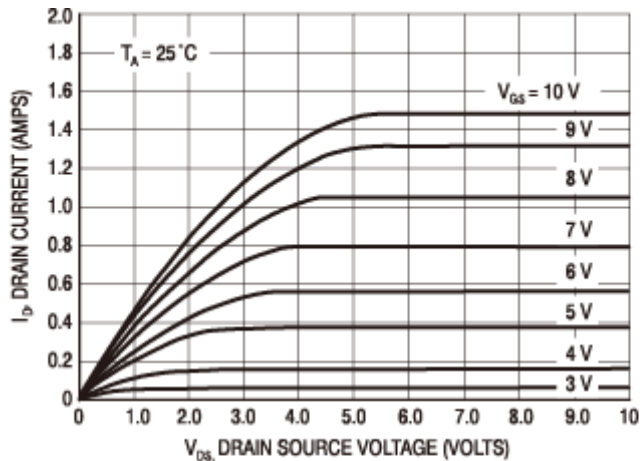


Figure 1. Ohmic Region

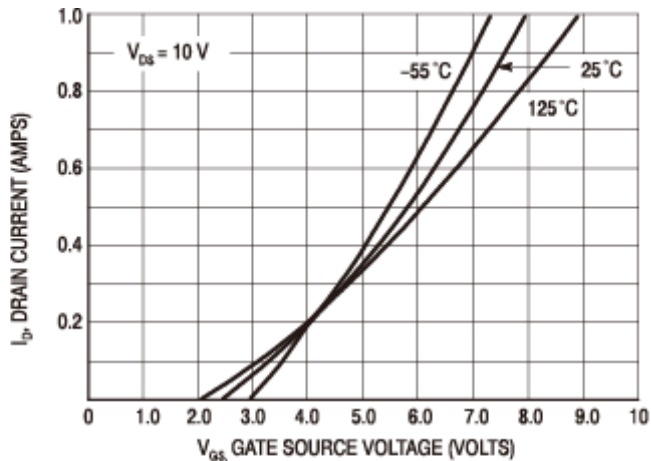


Figure 2. Transfer Characteristics

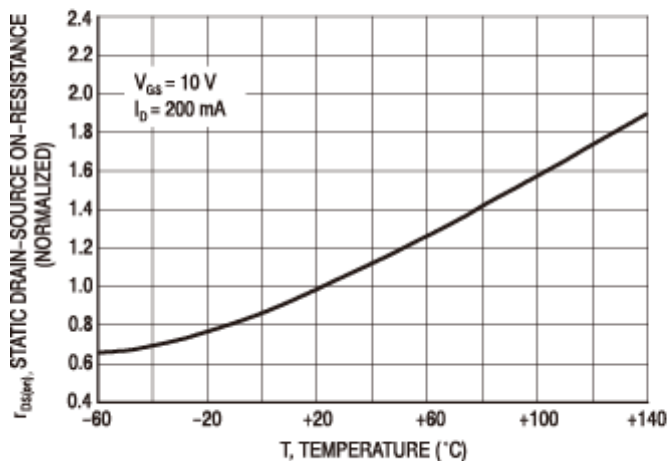


Figure 3. Temperature versus Static Drain-Source On-Resistance

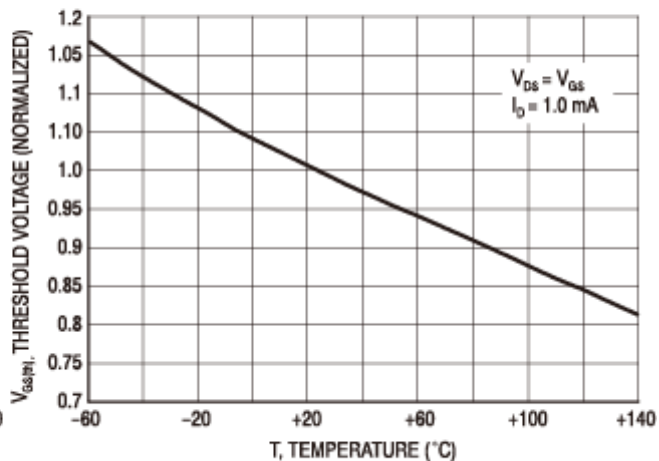


Figure 4. Temperature versus Gate Threshold Voltage