

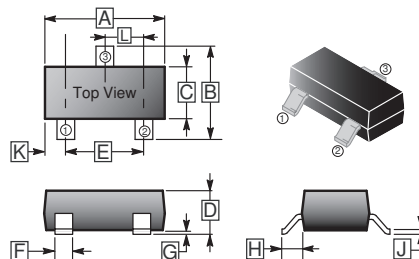
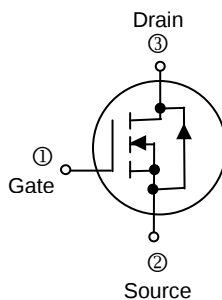
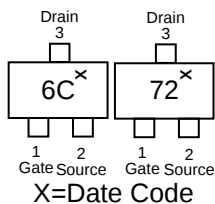
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

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 = 10μAdc
Zero Gate Voltage Drain Current	T _J =25℃	I _{DSS}	-	-	1.0	μAdc	V _{GS} =0, V _{DS} = 60Vdc
	T _J =125℃		-	-	500		
Gate-Body Leakage Current, Forward		I _{GSSF}	-	-	100	nAdc	V _{GS} =20Vdc
Gate-Body Leakage Current, Reverse		I _{GSSR}	-	-	-100	nAdc	V _{GS} =-20Vdc
ON CHARACTERISTICS ¹							
Gate Threshold Voltage		V _{GS(th)}	1.0	1.6	2.5	Vdc	V _{DS} = V _{GS} , I _D =250μAdc
On-State Drain Current		I _{D(ON)}	500	-	-	mA	V _{DS} ≥ 2.0V _{DS(ON)} , V _{GS} =10Vdc
Static Drain-Source On-State Voltage		V _{DS(ON)}	-	-	3.75	Vdc	V _{GS} =10Vdc, I _D =500mAdc
			-	-	0.375		V _{GS} =5Vdc, I _D =50mAdc
Static Drain-Source On-State Resistance (T _A =25℃)		r _{DS(ON)}	-	1.4	7.5	Ω	V _{GS} =10Vdc, I _D =500mAdc
			-	1.8	7.5		V _{GS} =5Vdc, I _D =50mAdc
Static Drain-Source On-State Resistance (T _A =125℃)		r _{DS(ON)}	-	-	13.5	Ω	V _{GS} =10Vdc, I _D =500mAdc
			-	-	13.5		V _{GS} =5Vdc, I _D =50mAdc
Forward Transconductance		g _{FS}	80	-	-	mmhos	V _{DS} ≥ 2V _{DS(ON)} , I _D =200mAdc
DYNAMIC CHARACTERISTICS							
Input Capacitance		C _{iSS}	-	17	50	pF	V _{DS} =25Vdc, V _{GS} =0, f=1MHz
Output Capacitance		C _{oSS}	-	10	25	pF	V _{DS} =25Vdc, V _{GS} =0, f=1MHz
Reverse Transfer Capacitance		C _{rSS}	-	2.5	5.0	pF	V _{DS} =25Vdc, V _{GS} =0, f=1MHz
SWITCHING CHARACTERISTICS ¹							
Turn-On Delay Time		td _(ON)	-	7	20	nS	V _{DD} =25Vdc, ,I _D ≈500mAdc R _G =25Ω, R _L =50Ω, V _{GEN} =10V
Turn-Off Delay Time		td _(OFF)	-	11	40		
BODY-DRAIN DIODE RATINGS							
Diode Forward On-Voltage		V _{SD}	-	-	-1.5	Vdc	I _S =11.5mAdc, V _{GS} =10V
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)

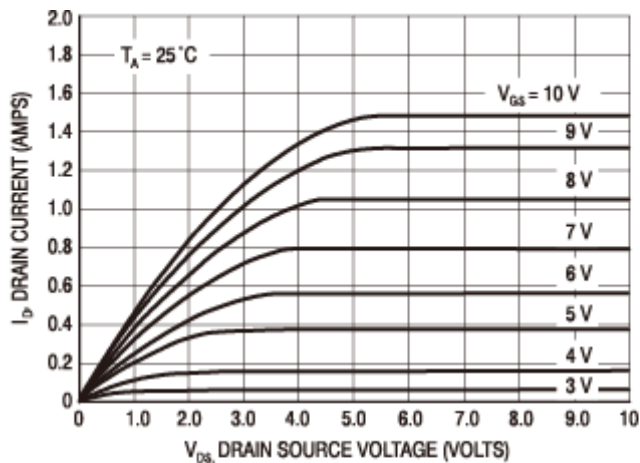


Figure 1. Ohmic Region

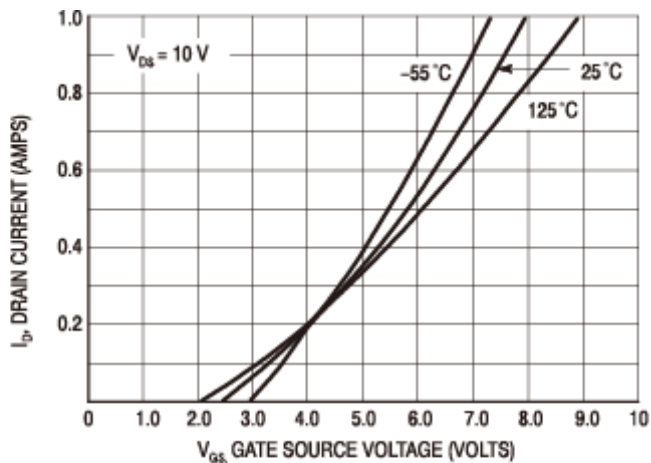


Figure 2. Transfer Characteristics

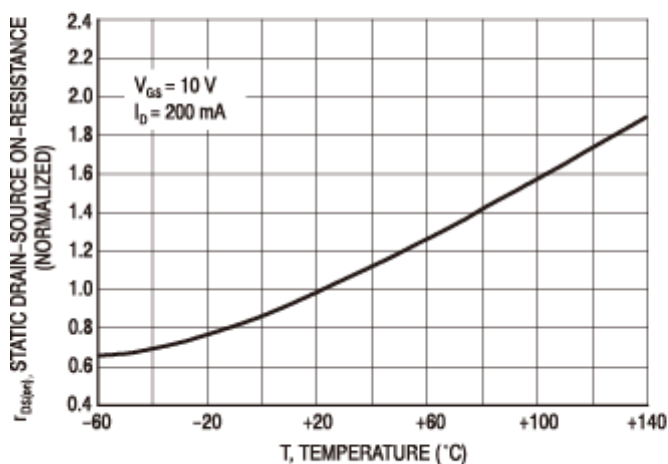


Figure 3. Temperature versus Static Drain-Source On-Resistance

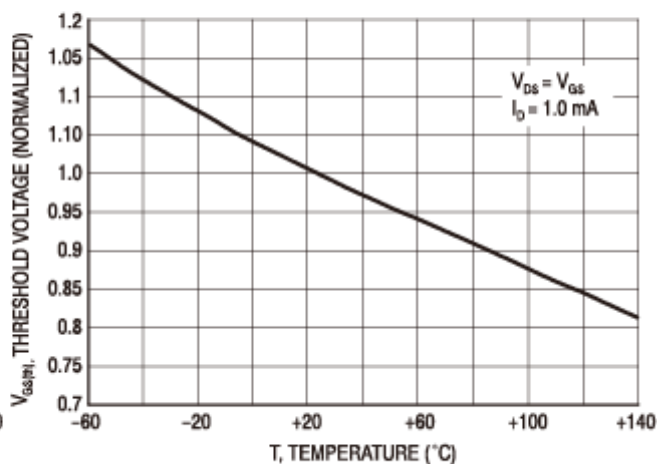


Figure 4. Temperature versus Gate Threshold Voltage