

PRIMARY CHARACTERISTICS

BV_{DSS}	$R_{DS(ON)MAX}$	I_D
-20V	670m Ω @ $V_{GS}=-2.5V$	-0.66A
	480m Ω @ $V_{GS}=-4.5V$	

Features

- ESD rating >2000V HBM
- P-Channel Enhancement Mode MOSFET
- RoHS compliant
- Halogen free

Mechanical Data

- Package: SOT-523
- Surface mount device
- 3 terminals
- RoHS and halogen free compliant

SOT-523



Applications

- Power management in notebook
- Portable equipment
- Battery powered system

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
DC3139K	SOT-523	-	7" Tape&Reel	3,000

Maximum Ratings (@ $T_A = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	-20	V
Gate - Source Voltage	V_{GS}	± 10	V
Continuous Drain Current ($V_{GS} = 4.5V$) ⁽¹⁾	I_D	-0.66	A
Pulsed Drain Current ⁽²⁾	I_{DM}	-1	A
Power Dissipation	P_D	0.35	W
Junction & Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

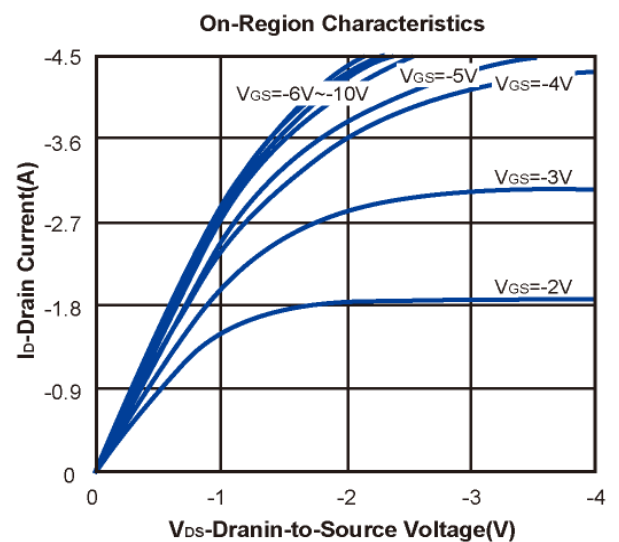
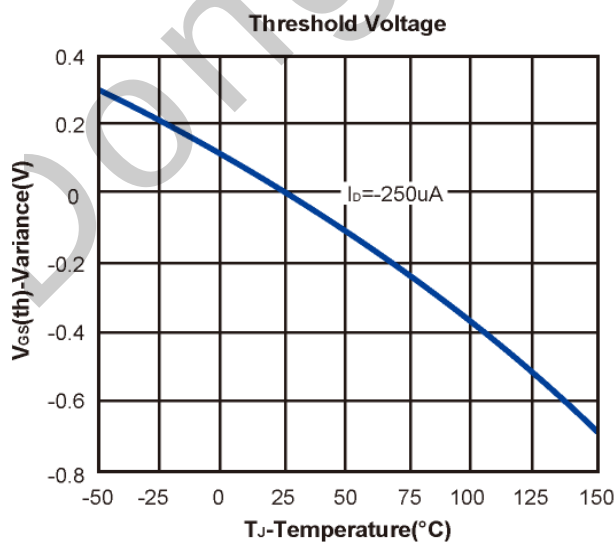
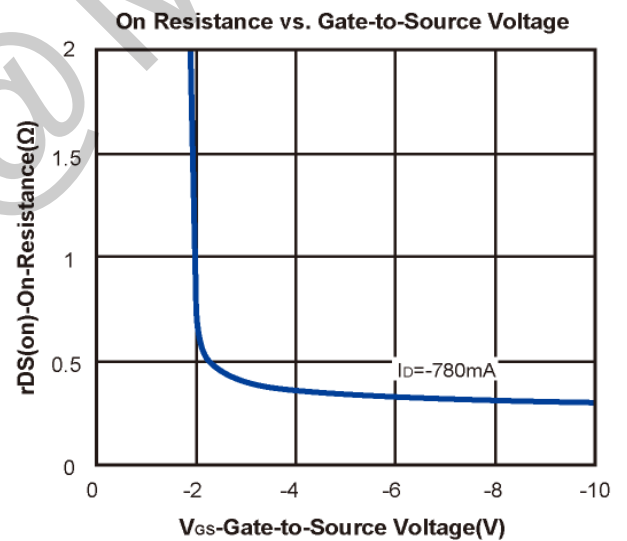
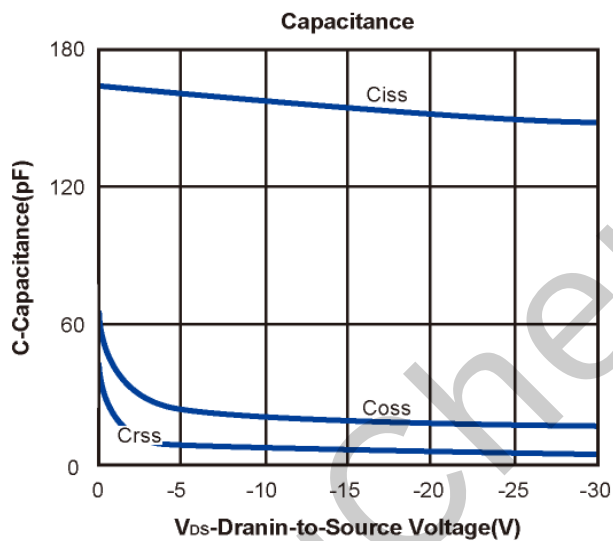
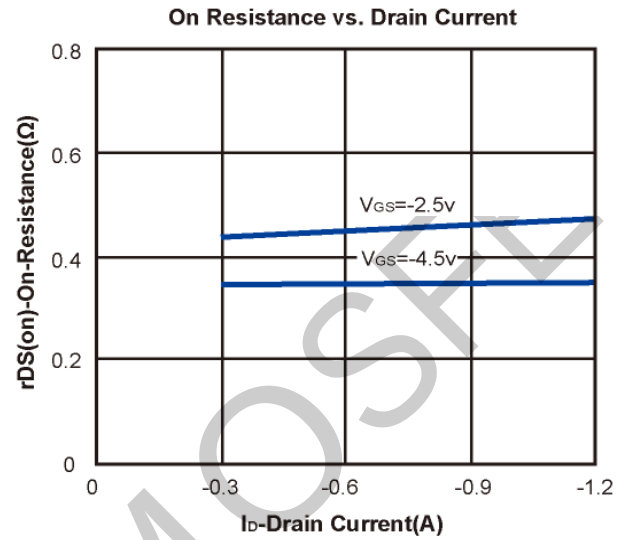
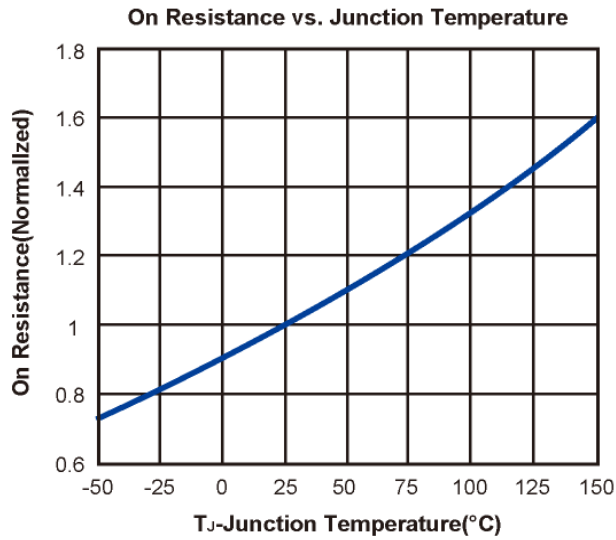
Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient ⁽³⁾	$R_{\theta JA}$	375	-	$^\circ\text{C/W}$

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$, unless otherwise specified.)

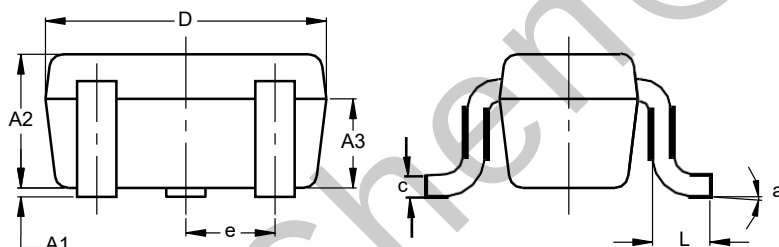
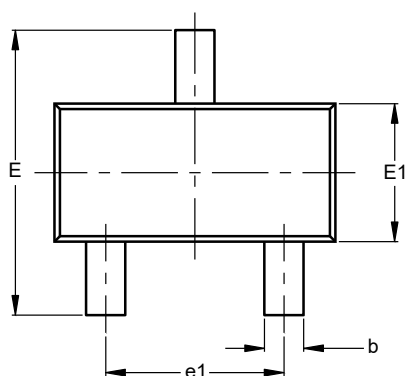
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics ⁽⁴⁾						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	VGS=0V, ID=-250μA	-20	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	VDS=-16V VGS = 0V, TJ=25°C	-	-	-1	μA
Gate-Source Leakage Current	I _{GSS}	VGS=±8V, VDS = 0V	-	-	±10	nA
On Characteristics ⁽⁴⁾						
Gate Threshold Voltage	V _{GS(th)}	VDS=VGS, ID=-250μA	-0.5	-0.8	-1.1	V
Static Drain-Source On-Resistance	R _{DS(ON)}	VGS=-4.5V, ID=-0.66A	-	350	480	mΩ
		VGS=-2.5V, ID=-0.4A	-	440	670	mΩ
Diodes Forward Voltage	V _{SD}	IS=-0.15A, VGS=0V	-	-	-1.2	V
Dynamic Characteristics ⁽⁴⁾						
Input Capacitance	C _{iss}	VDS=-16V, VGS=0V, f=1MHz	-	152	-	pF
Output Capacitance	C _{oss}		-	18.5	-	pF
Reverse Transfer Capacitance	C _{rss}		-	6	-	pF
Switching Characteristics ⁽⁵⁾						
Turn-On DelayTime	t _{d(on)}	VGS=-5V, VDD=-10V ID=-0.2A, RG=10Ω	-	51.3	-	ns
Rise Time	t _r		-	24.2	-	ns
Turn-Off DelayTime	t _{d(off)}		-	246	-	ns
Fall Time	t _f		-	81.2	-	ns
Notes:						
1. This current is chip limited, which is calculated based on Rthja.						
2. This current is calculated on single pulse with 10μs Single Pulse .						
3. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.						
4. Short duration pulse test used to minimize self-heating effect.						
5. Defined by design, not subject to production.						

Typical Electrical and Thermal Characteristics



Outline Drawing

SOT-523

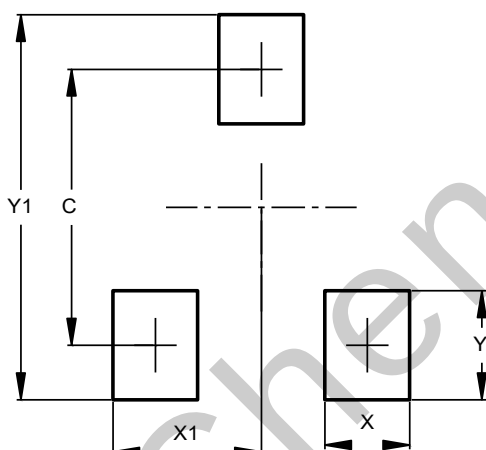


SOT523			
Dim	Min	Max	Typ
A1	0.00	0.10	0.05
A2	0.60	0.80	0.75
A3	0.45	0.65	0.50
b	0.15	0.30	0.22
c	0.10	0.20	0.12
D	1.50	1.70	1.60
E	1.45	1.75	1.60
E1	0.75	0.85	0.80
e	0.50 BSC		
e1	0.90	1.10	1.00
L	0.20	0.40	0.33
a	0°	--	8°

All Dimensions in mm

Suggested Soldering Pad Layout

SOT-523



Dimensions	Value (in mm)
C	1.29
X	0.40
X1	0.70
Y	0.51
Y1	1.80

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