

# DP3139KT

## DP3139KT P-Channel Enhancement Mode Field Effect Transistor

### General description

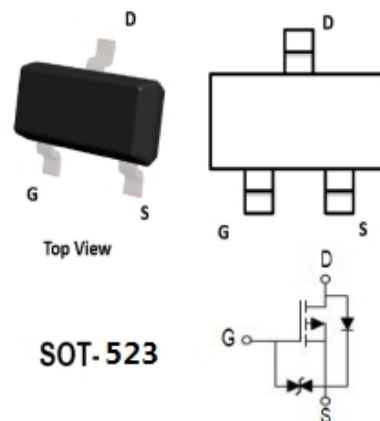
P-Channel Enhancement Mode Field Effect Transistor

### Features:

- $V_{DS} : -20V$
- $I_D : -0.66A$
- $R_{DS(ON)}$ ( at  $V_{GS}=-4.5V$ )  $< 480$  mohm
- $R_{DS(ON)}$ ( at  $V_{GS}=-2.5V$ )  $< 670$  mohm

### Applications

- Power Management in Note book
- Portable Equipment
- Battery Powered System



### Device Marking Code:

Device Type	Device Marking
DP3139KT	39 or 39K

### Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-source Voltage	$V_{DS}$	-20	V
Gate-source Voltage	$V_{GS}$	$\pm 6$	V
Continuous Drain Current	$I_D$	-660	mA
Pulsed Drain Current <sup>A</sup>	$I_{DM}$	-1000	mA
Power Dissipation with no heat sink @ TA=25°C	$P_D$	350	mW
Thermal Resistance From Junction To Ambient	$R_{\theta JA}$	375	°C/W
Operation Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_{STG}$	-55 ~ +150	°C

## Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)

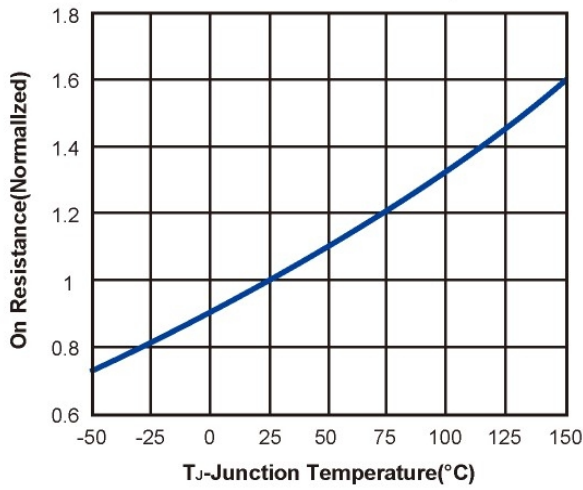
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-source breakdown voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> =-250μA	-20			V
Zero gate voltage drain current	I <sub>DSS</sub>	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V			-1	μA
Gate-body leakage current	I <sub>GSS1</sub>	V <sub>GS</sub> = ±4.5V, V <sub>DS</sub> =0V			±10	μA
Gate threshold voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =-250μA	-0.5	-0.8	-1.1	V
Drain-source on-resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> = -4.5V, I <sub>D</sub> =-660mA		350	480	mΩ
		V <sub>GS</sub> = -2.5V, I <sub>D</sub> =-400mA		440	670	
<b>Dynamic characteristics <sup>B</sup></b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-16V, V <sub>GS</sub> =0V, f=1MHZ		152		pF
Output Capacitance	C <sub>oss</sub>			18.5		
Reverse Transfer Capacitance	C <sub>rss</sub>			6		
<b>Switching Characteristics <sup>B</sup></b>						
Turn-on delay time	t <sub>d(on)</sub>	V <sub>GS</sub> =-5.0V, V <sub>DD</sub> =-10V, R <sub>G</sub> =10Ω, I <sub>D</sub> =-200mA		51.3		ns
Turn-on rise time	t <sub>r</sub>			24.2		
Turn-off delay time	t <sub>d(off)</sub>			246		
Turn-off fall time	t <sub>f</sub>			81.2		
<b>Source-Drain Diode characteristics</b>						
Diode Forward voltage <sup>C</sup>	V <sub>DS</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-150mA			-1.2	V

### Notes:

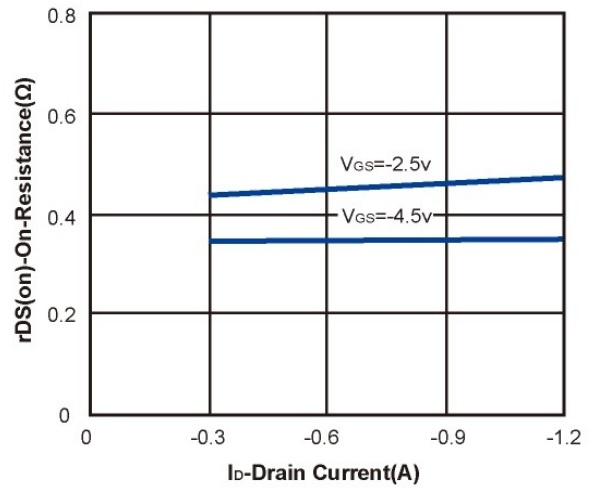
- A. Repetitive Rating: Pulse width limited by maximum junction temperature.
- B. These parameters have no way to verify.
- C. Pulse Test: Pulse Width ≤ 300us, Duty Cycle ≤ 0.5%.

## Typical Performance Characteristics

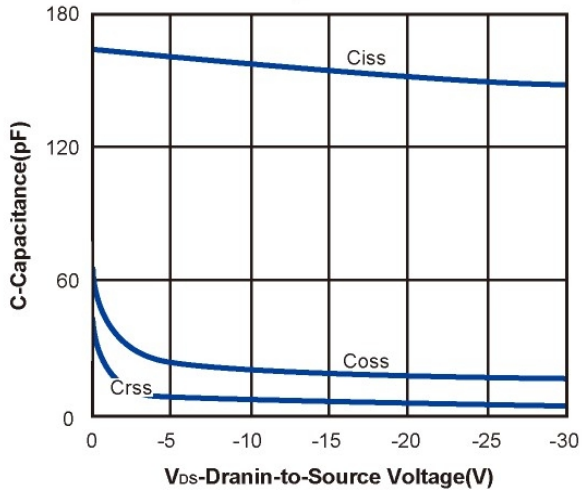
On Resistance vs. Junction Temperature



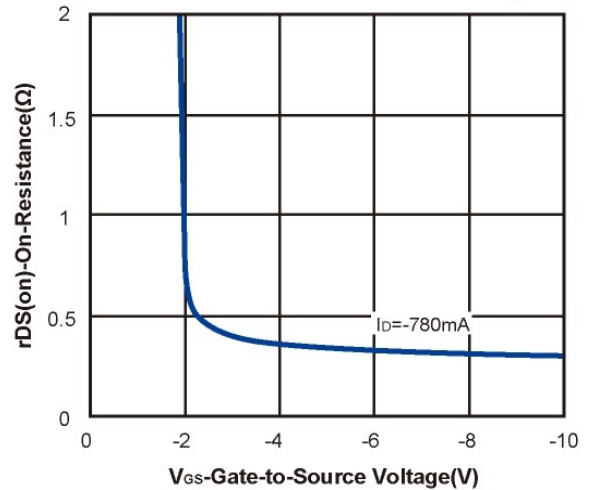
On Resistance vs. Drain Current



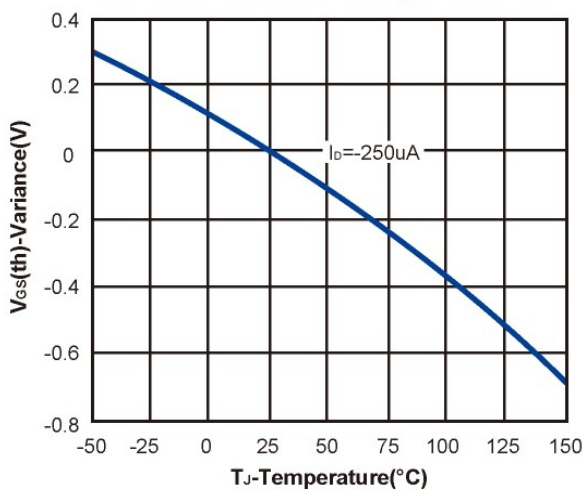
Capacitance



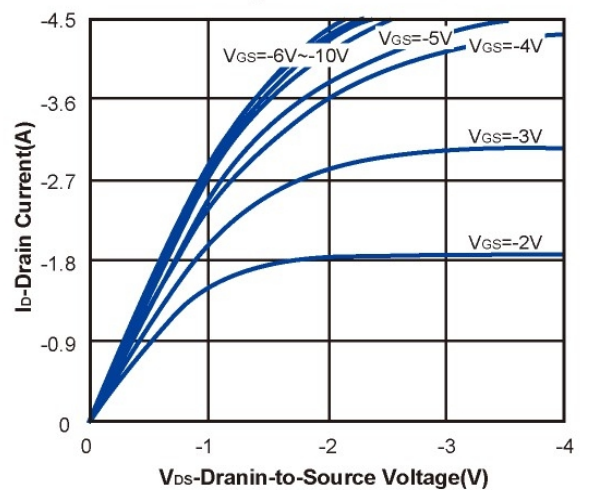
On Resistance vs. Gate-to-Source Voltage



Threshold Voltage

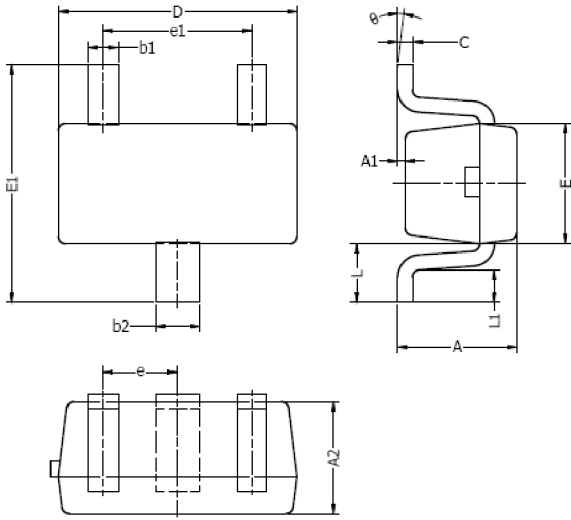


On-Region Characteristics



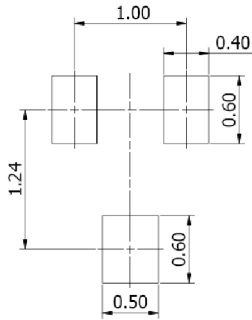
# DP3139KT

## SOT-523 Package Outline



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10	0.035	0.043
L	0.40 REF.		0.016 REF.	
L1	0.10	0.30	0.004	0.012
theta	0°	8°	0°	8°

### Typical Soldering Pattern:



### Note

1. Above package outline conforms to JEITA EAIJ ED-7500A SC-75A.
2. Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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