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TPM3139K

P-Channel Enhancement Mode MOSFET

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Features

- V_{DS} = -20V,I_D = -0.55A
  $R_{DS(ON)}$ < 590mΩ @ V_{GS}=-4.5V
  $R_{DS(ON)}$ < 900mΩ@ V_{GS}=-2.5V
- ESD Protection

Application

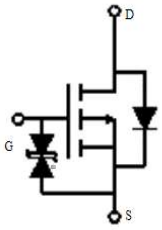
- Load/Power Switching
- Interfacing Switching
- Battery Management for Ultra Small Portable Electronics
- Logic Level Shift

Package and Pin Configuration



SOT-523

Circuit diagram



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

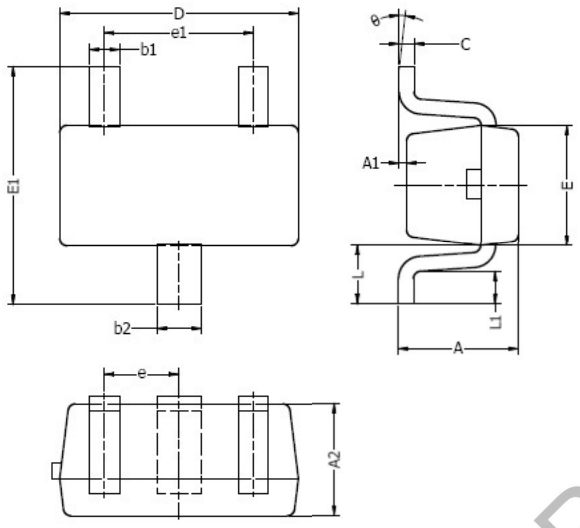
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	-0.55	A
Pulsed Drain Current (t=300μs) (1)	I_{DM}	-1.4	A
Power Dissipation (2)	P_D	280	mW
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	452	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

Electrical Characteristics (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-20			V
Zero gate voltage drain current	I_{DSS}	V_{DS} = -20V, V_{GS} = 0V			-1	μA
Gate-body leakage current	I_{GSS}	V_{GS} = ±10V, V_{DS} = 0V			±10	μA
Gate threshold voltage(3)	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-0.5	-0.75	-1.1	V
Drain-source on-resistance(3)	$R_{DS(on)}$	V_{GS}=-4.5V, I_{DS}=-550mA			590	mΩ
		V_{GS}=-2.5V, I_{DS}=-450mA			900	
Forward tranconductance	g_{FS}	V_{DS} =-5V, I_D =500mA		1		S
Dynamic characteristics(4)						
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-10V, Freq.=1MHz			60	pF
Output Capacitance	C_{oss}				6	
Reverse Transfer Capacitance	C_{rss}				5	
Switching Characteristics(4)						
Turn-on delay time	$t_{d(on)}$	V_{GS}=-4.5V, V_{DS}=-10V, I_D=-1A, R_{GEN}=3Ω		0.45		us
Turn-on rise time	t_r			0.04		
Turn-off delay time	$t_{d(off)}$			0.035		
Turn-off fall time	t_f			1.1		
Source-Drain Diode characteristics						
Diode Forward voltage(3)	V_{DS}	I_S=0.15A, V_{GS} = 0V			-1.2	V

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SOT523 Package Outline Drawing

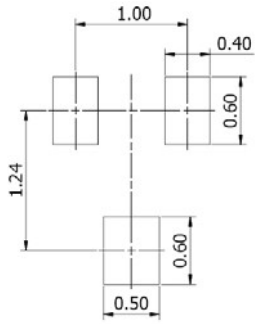


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10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

NOTES:
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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Suggested Land Pattern



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DMPH6050SK3-TP TPM2013PLS8-1 TPM20V2PLX6-1 ESD5Z7V0C IRLR3110ZTRPBF-TP TPG619C6 TPM30V6NS6-2 ESD5Z7V0 TPESD05R4UD LM337BD2TR4G-TP TPM30V8ND6-1 TPNUP4202W1T2G BSL215C FDMC5614P SI4936ADY-TP TPM6028NK3-1 TPS73230DBVR-TP TPM7002ES3 2SJ360-TP SMFJ24A TP3USB30Q10 TPAX809SS3 BV03CWT PESD9R3.3ST5G TPM3090NK3-5 TPMZB670UPE TPNTD6416ANLT4G PNTK3139PT5G TP6841S6-1 TPESD1221P