

Features

- Low Input/Output Leakage
- Exceptional ON Resistance and Maximum DC Current Capability
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

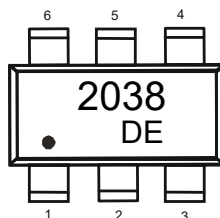
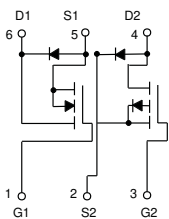
Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Maximum Thermal Resistance: 119°C/W Junction to Ambient^(Note)

Parameter	Symbol	Rating	Unit
N-Channel			
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	±8	V
Continuous Drain Current	I_D	5	A
P-Channel			
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±12	V
Continuous Drain Current	I_D	-4	A
Total Power Dissipation	P_D	1	W

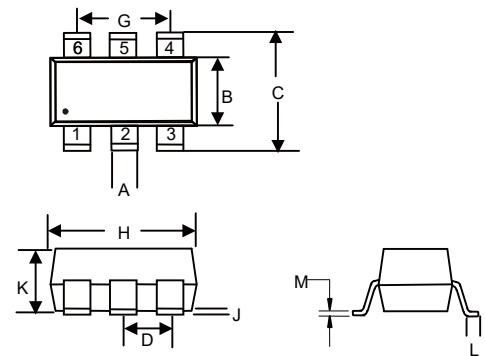
Note: Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Internal Structure and Marking Code



Dual N&P-Channel MOSFET

SOT23-6L



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.012	0.020	0.30	0.50	
B	0.051	0.070	1.30	1.80	
C	0.087	0.126	2.20	3.20	
D	0.037		0.95		TYP.
G	0.074		1.90		TYP.
H	0.106	0.122	2.70	3.10	
J	0.002	0.006	0.05	0.15	
K	0.030	0.051	0.75	1.30	
L	0.012	0.024	0.30	0.60	
M	0.003	0.008	0.08	0.22	

Electrical Characteristics @ 25°C (Unless Otherwise Specified)
N-Channel

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$			± 0.1	μA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.5	0.7	1	V
Drain-source on-resistance ^(Note 1)	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 4.5A$		19.5	25	m Ω
		$V_{GS} = 2.5V, I_D = 3A$		25	32	
		$V_{GS} = 1.8V, I_D = 2A$		33	49	
Forward transconductance	g_{FS}	$V_{DS} = 5V, I_D = 7A$	9			S
Diode forward voltage	V_{SD}	$I_S = 1.7A, V_{GS} = 0V$		0.7	1.3	V
Dynamic characteristics^(Note 2)						
Total gate charge	Q_g	$V_{DS} = 10V, V_{GS} = 4.5V, I_D = 4A$		11		nC
Gate-source charge	Q_{gs}			2.3		
Gate-drain charge	Q_{gd}			2.5		
Input Capacitance	C_{iss}	$V_{DS} = 8V, V_{GS} = 0V, f = 1MHz$		800		pF
Output Capacitance	C_{oss}			155		
Reverse Transfer Capacitance	C_{rss}			125		
Switching Characteristics^(Note 2)						
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 10V, V_{GS} = 4V, I_D = 1A$ $R_G = 10\Omega$		18	32	ns
Turn-on rise time	t_r			5	10	
Turn-off delay time	$t_{d(off)}$			43	68	
Turn-off fall time	t_f			20	35	

Notes : 1. Pulse Test : Pulse width $\leq 300\mu s$, duty cycles $\leq 0.5\%$.

2. Guaranteed by design, not subject to production testing.

Electrical Characteristics @ 25°C (Unless Otherwise Specified)

P-Channel

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = -16V, V_{GS} = 0V$			-1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 12V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.5	-0.7	-1	V
Drain-source on-resistance ^(Note 1)	$R_{DS(on)}$	$V_{GS} = -4.5V, I_D = -3.5A$		49	64	m Ω
		$V_{GS} = -2.5V, I_D = -3A$		59	80	
		$V_{GS} = -1.8V, I_D = -2A$		79	110	
Forward transconductance	g_{FS}	$V_{DS} = -5V, I_D = -2A$	5			S
Dynamic characteristics^(Note 2)						
Input Capacitance	C_{iss}	$V_{DS} = -10V, V_{GS} = 0V, f = 1MHz$		405		pF
Output Capacitance	C_{oss}			75		
Reverse Transfer Capacitance	C_{rss}			55		
Gate resistance	R_g	$f = 1MHz$		6		Ω
Total Gate Charge	Q_g	$V_{DS} = -10V, V_{GS} = -2.5V, I_D = -3A$		3.3	12	nC
Gate-Source Charge	Q_{gs}			0.7		
Gate-Drain Charge	Q_{gd}			1.3		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = -10V, V_{GEN} = -4.5V, I_D = -1A$ $R_L = 10\Omega, R_{GEN} = 1\Omega$		11	20	ns
Turn-on rise time	t_r			35	56	
Turn-off delay time	$t_{d(off)}$			30	48	
Turn-off fall time	t_f			10	18	
Source-Drain Diode characteristics						
Diode Forward voltage	V_{SD}	$V_{GS} = 0V, I_S = -1.25A$		-0.7	-1.3	V

- Notes :**
1. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 0.5\%$.
 2. Guaranteed by design, not subject to production testing.

Curve Characteristics(N-Channel)

Fig. 1 - Output Characteristics

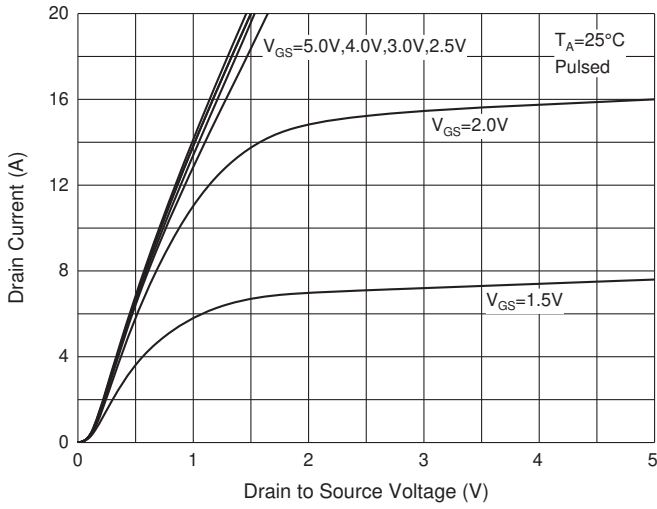


Fig. 2 - Transfer Characteristics

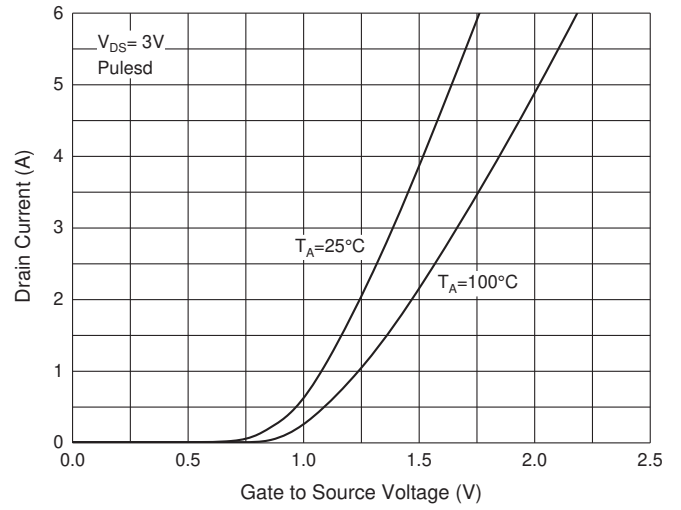


Fig. 3 - $R_{DS(ON)} - I_D$

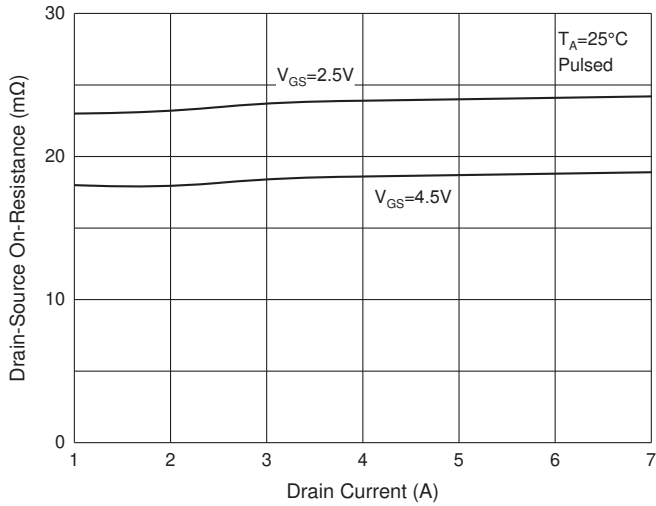


Fig. 4 - $R_{DS(ON)} - V_{GS}$

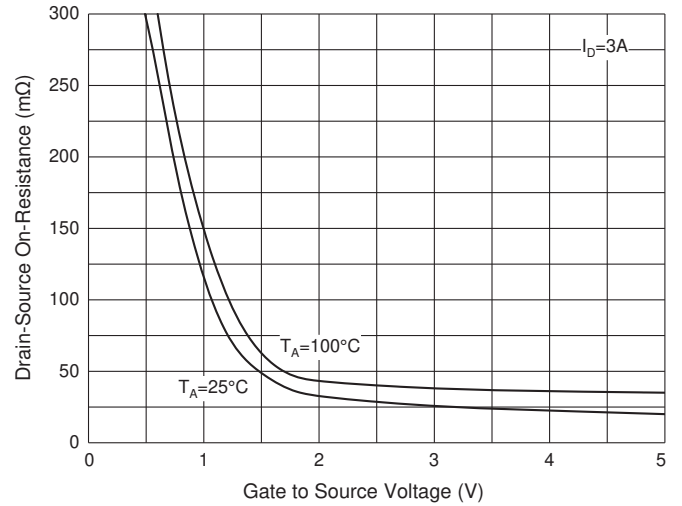


Fig. 5 - $I_S - V_{SD}$

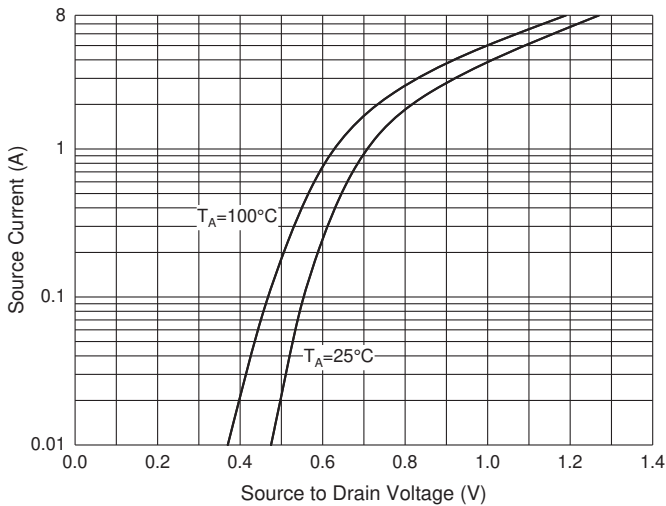
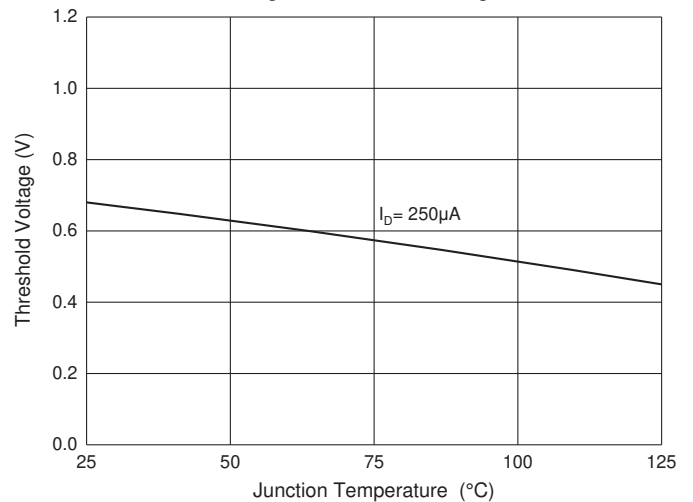


Fig. 6 - Threshold Voltage



Curve Characteristics(P-Channel)

Fig. 1 - Output Characteristics

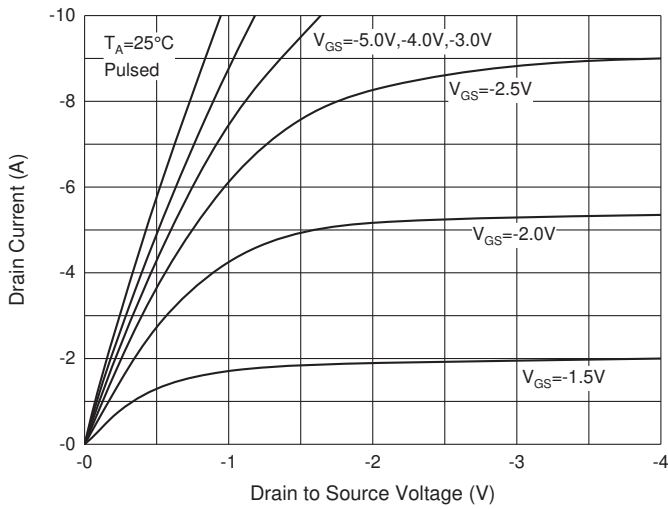


Fig. 2 - Transfer Characteristics

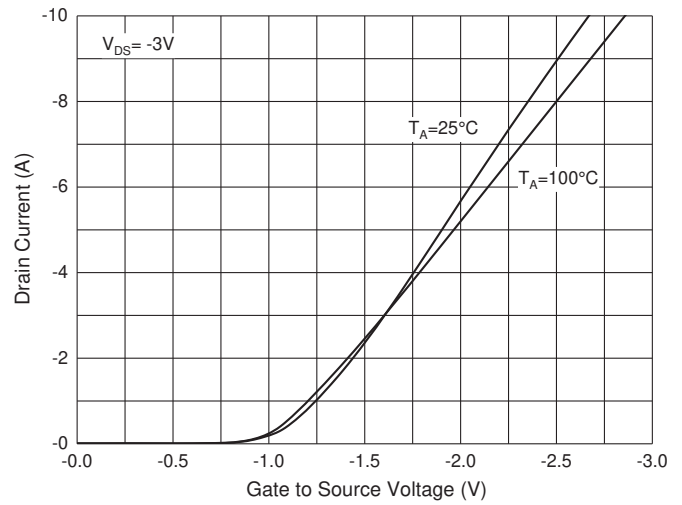


Fig. 3 - $R_{DS(ON)} - I_D$

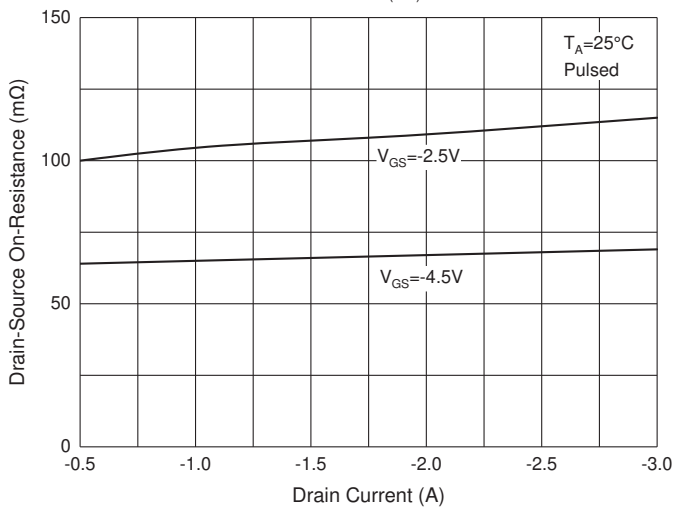


Fig. 4 - $R_{DS(ON)} - V_{GS}$

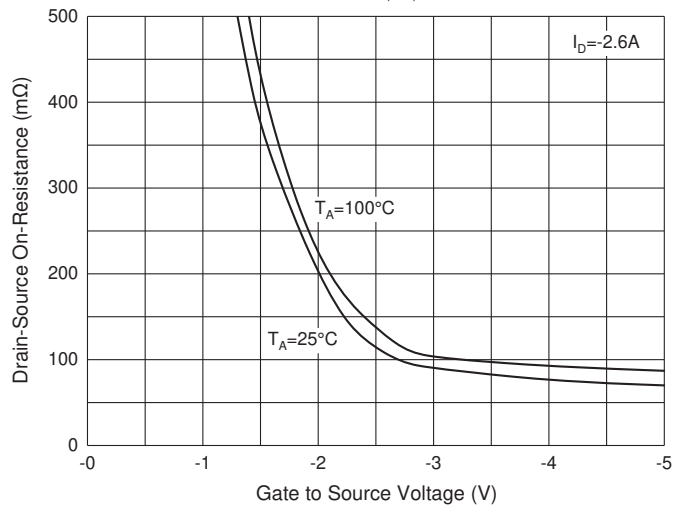


Fig. 5 - $I_S - V_{SD}$

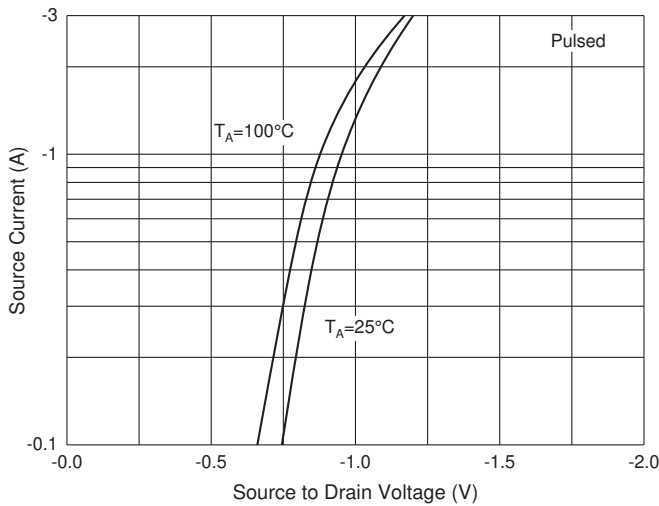
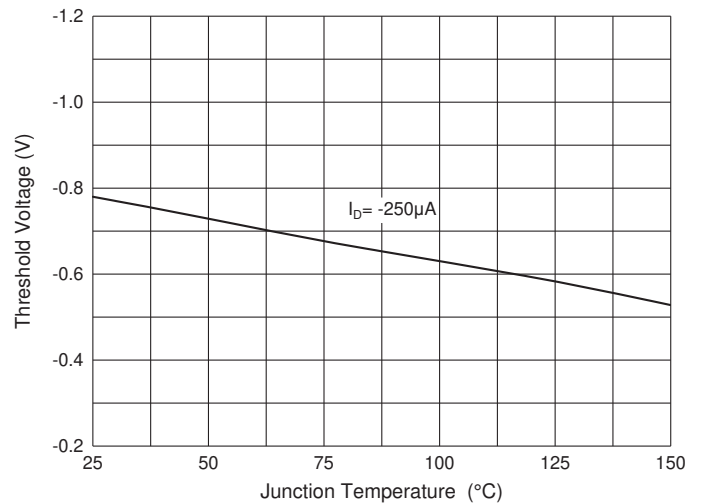


Fig. 6 - Threshold Voltage



Ordering Information

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

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