

## Features

- High-Side Switching
- Low Threshold
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. "Green" Device (Note 1)
- 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
- Thermal Resistance: 833°C/W Junction to Ambient (Note 2)

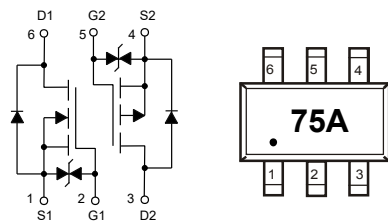
Parameter	Symbol	Rating	Unit
Total Power Dissipation	$P_D$	150	mW
<b>N-Channel MOSFET</b>			
Drain-Source Voltage	$V_{DS}$	60	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	0.34	A
Pulsed Drain Current (Note 3)	$I_{DM}$	1.36	A
<b>P-Channel MOSFET</b>			
Drain-Source Voltage	$V_{DS}$	-50	V
Gate-Source Voltage	$V_{GS}$	±20	V
Continuous Drain Current	$I_D$	-0.18	A
Pulsed Drain Current (Note 3)	$I_{DM}$	-0.7	A

Note: 1. Halogen free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

2. Surface Mounted on FR-4 Board Using Minimum Pad Size, 1oz Copper.

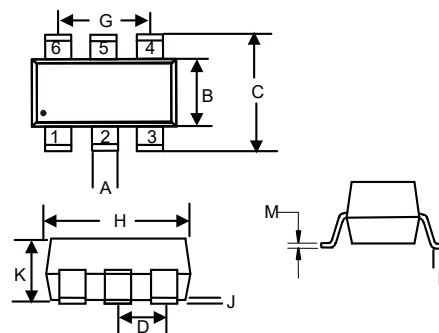
3. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

## Internal Structure and Marking Code



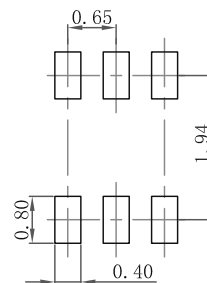
# Dual N&P-Channel MOSFET

## SOT-363



DIM	DIMENSIONS				NOTE
	INCHES		MM		
	MIN	MAX	MIN	MAX	
A	0.006	0.014	0.15	0.35	
B	0.045	0.053	1.15	1.35	
C	0.079	0.096	2.00	2.45	
D	0.026		0.65		TYP.
G	0.047	0.055	1.20	1.40	
H	0.071	0.087	1.80	2.20	
J	-----	0.004	-----	0.10	
K	0.031	0.043	0.80	1.10	
L	0.010	0.018	0.26	0.46	
M	0.003	0.006	0.08	0.15	

### Suggested Solder Pad Layout



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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	60			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 10$	$\mu A$
		$V_{DS}=0V, V_{GS}=\pm 10V$			$\pm 200$	nA
		$V_{DS}=0V, V_{GS}=\pm 5V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=48V, V_{GS}=0V$			1	$\mu A$
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=1mA$	1	1.3	2.5	V
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=4.5V, I_D=0.2A$		1.1	5.3	$\Omega$
		$V_{GS}=10V, I_D=0.5A$		0.9	5	
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=0.3A$			1.5	V
<b>Dynamic Characteristics<sup>(Note 5)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, f=1MHz$			40	pF
Output Capacitance	$C_{oss}$				30	
Reverse Transfer Capacitance	$C_{rss}$				10	
<b>Switching Characteristics<sup>(Note 5)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS}=10V, V_{DS}=50V, R_L=250\Omega,$ $R_{GEN}=10\Omega$			10	ns
Turn-Off Delay Time	$t_{d(off)}$				15	
Reverse recovery time	$t_{rr}$	$I_S=300mA, di/dt=-100A/s, V_{GS}=0V,$ $V_R=25V$		30		ns
Recovered charge	$Q_r$				30	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=-250\mu A$	-50			V
Gate-Source Leakage Current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 20V$			$\pm 10$	$\mu A$
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-50V, V_{GS}=0V$			-1	$\mu A$
		$V_{DS}=-25V, V_{GS}=0V$			-0.1	$\mu A$
Gate-Threshold Voltage <sup>(Note 4)</sup>	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=-250\mu A$	-0.9	-1.62	-2	V
Drain-Source On-Resistance <sup>(Note 4)</sup>	$R_{DS(on)}$	$V_{GS}=-5V, I_D=-0.1A$		5.5	10	$\Omega$
		$V_{GS}=-10V, I_D=-0.1A$		4.1	8	
Forward Transconductance <sup>(Note 4)</sup>	$g_{FS}$	$V_{DS}=-25V, I_D=-0.1A$	0.05			S
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=-0.18A$			-2.2	V
<b>Dynamic Characteristics<sup>(Note 5)</sup></b>						
Input Capacitance	$C_{iss}$	$V_{DS}=-5V, V_{GS}=0V, f=1MHz$		30		pF
Output Capacitance	$C_{oss}$			10		
Reverse Transfer Capacitance	$C_{rss}$			5		
<b>Switching Characteristics<sup>(Note 5)</sup></b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=-15V, I_D=-2.5A, R_L=50\Omega$		2.5		ns
Turn-On Rise Time	$t_r$			1		
Turn-Off Delay Time	$t_{d(off)}$			16		
Turn-Off Fall Time	$t_f$			8		

 Note: 4. Pulse Test : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$ .

5. Guaranteed by Design, Not Subject to Production Testing.

**Curve Characteristics(N-Channel)**

Fig. 1 - Output Characteristics

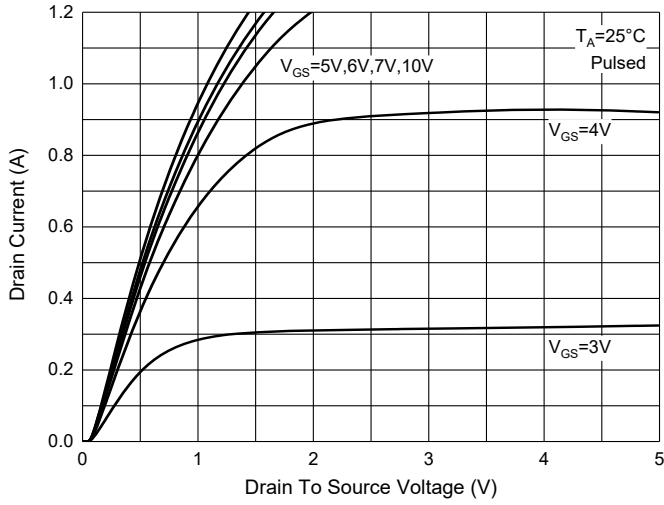


Fig. 2 - Transfer Characteristics

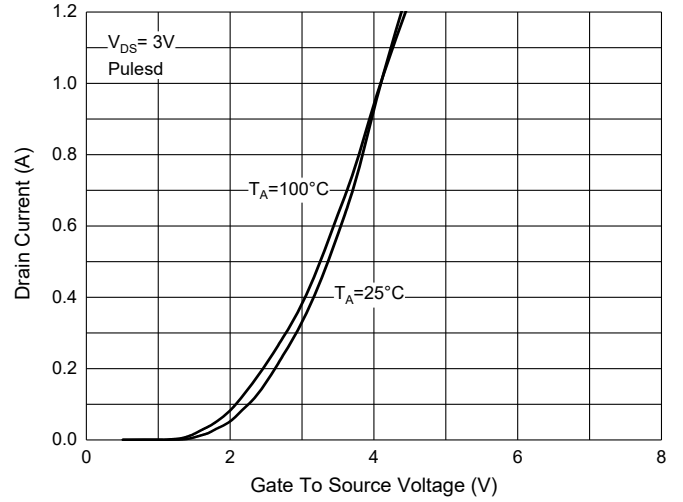


Fig. 3 -  $R_{DS(ON)} - I_D$

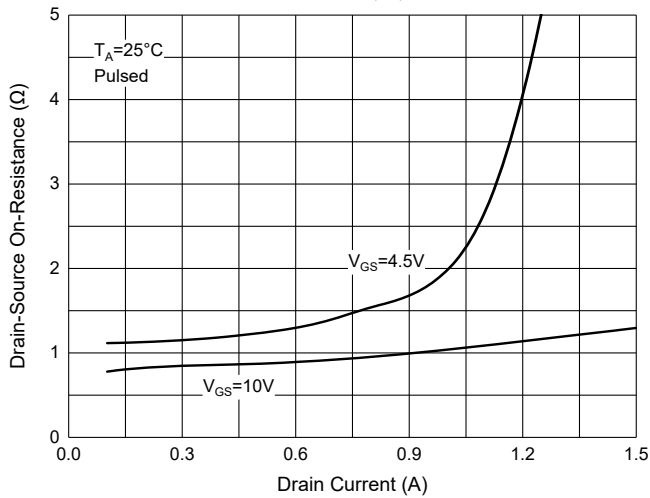


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

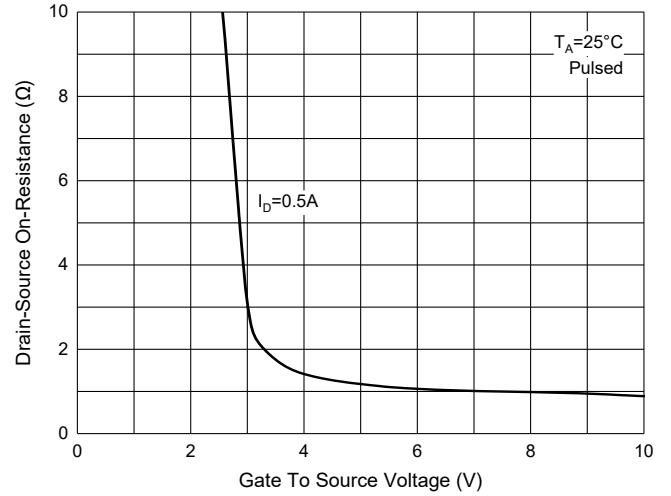


Fig. 5 -  $I_S - V_{SD}$

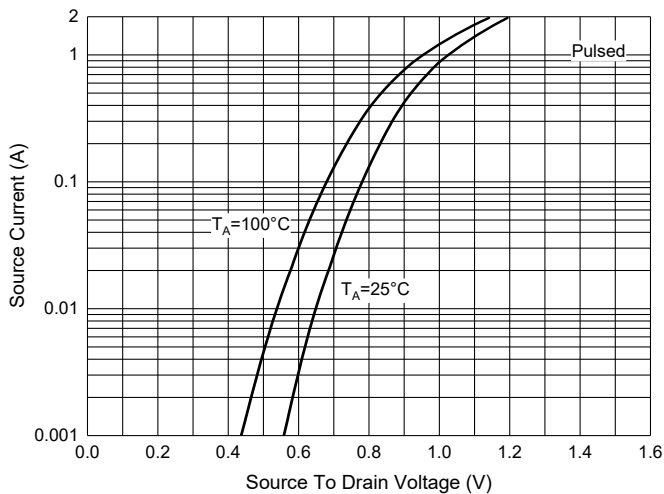
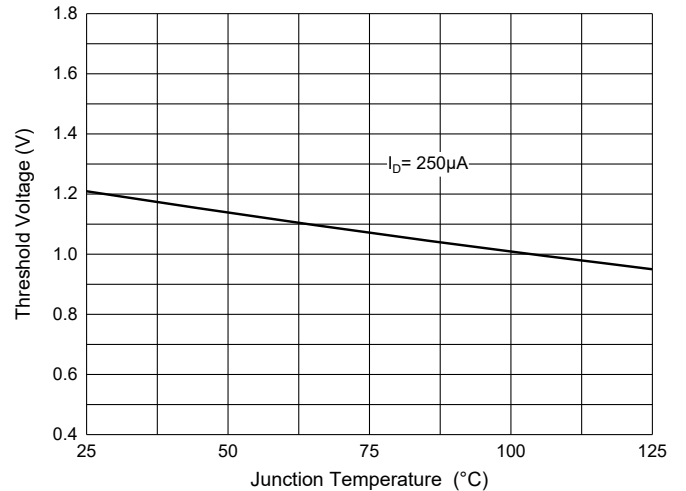


Fig. 6 - Threshold Voltage



**Curve Characteristics(P-Channel)**

Fig. 1 - Output Characteristics

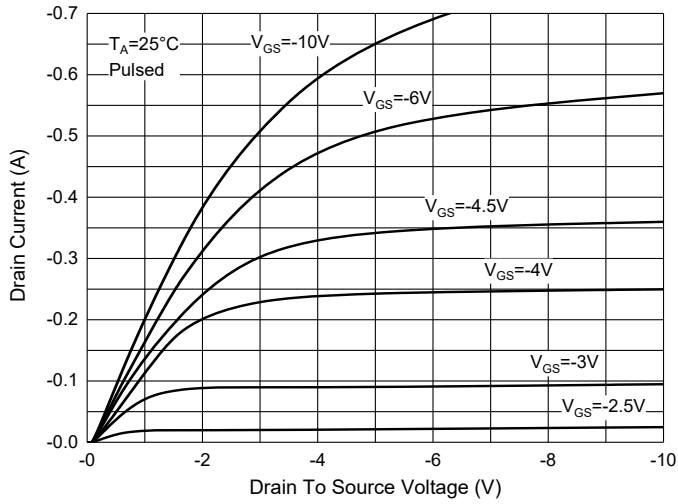


Fig. 2 - Transfer Characteristics

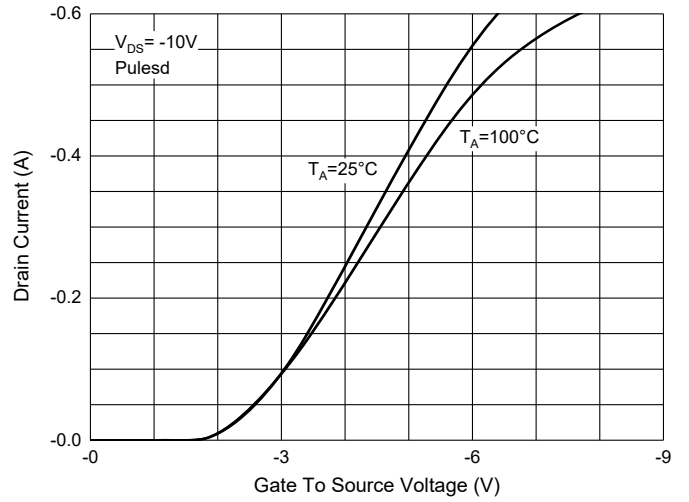


Fig. 3 -  $R_{DS(ON)} - I_D$

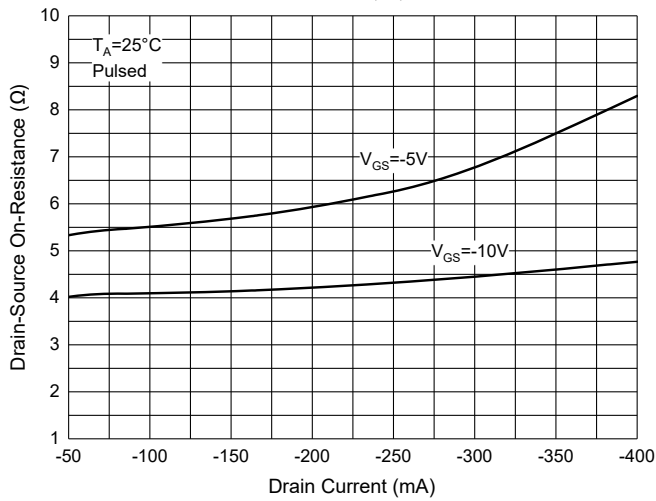


Fig. 4 -  $R_{DS(ON)} - V_{GS}$

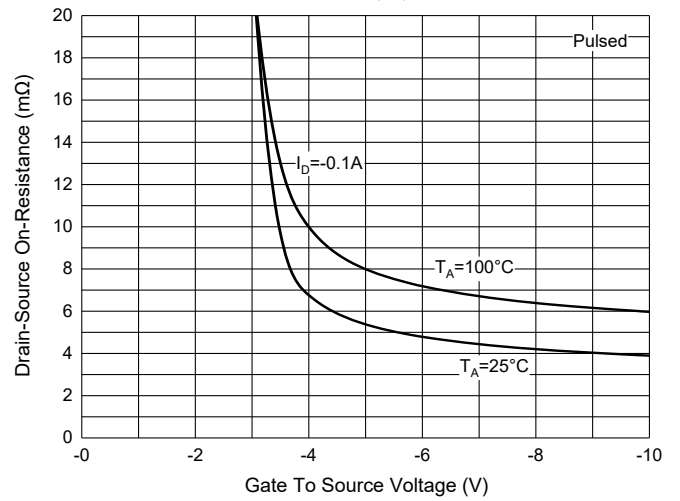


Fig. 5 -  $I_S - V_{SD}$

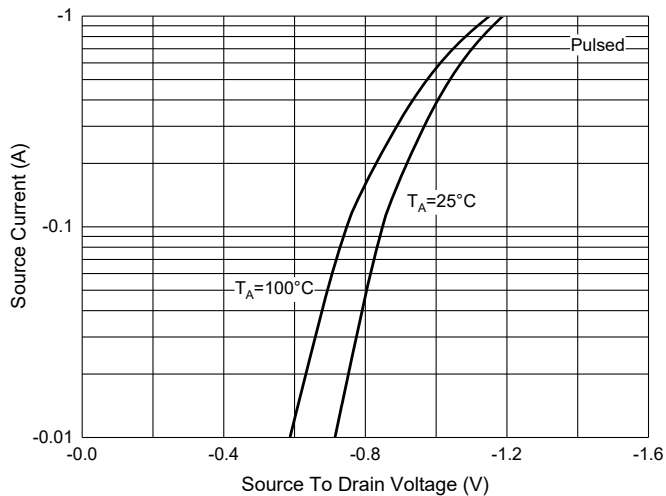
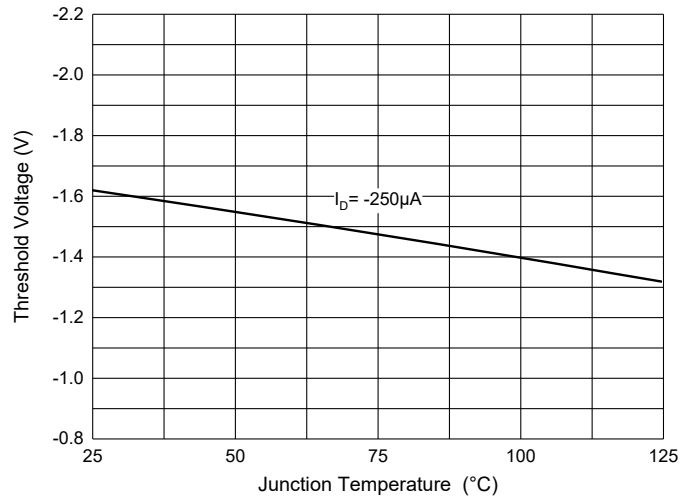


Fig. 6 - Threshold Voltage



## Ordering Information

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

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