

### SOT-363



### Pin Definition:

- |             |             |
|-------------|-------------|
| 1. Source 2 | 6. Drain 2  |
| 2. Gate 2   | 5. Gate 1   |
| 3. Drain 1  | 4. Source 1 |

### PRODUCT SUMMARY

$V_{DS}$ (V)	$R_{DS(on)}$ ( $\Omega$ )	$I_D$ (mA)
60	2 @ $V_{GS} = 10V$	300
	4 @ $V_{GS} = 4.5V$	200

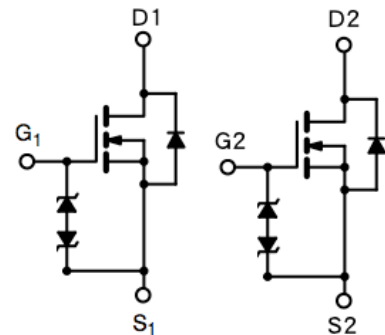
### Features

- Low On-Resistance
- ESD Protection
- High Speed Switching
- Low Voltage Drive

### Ordering Information

Part No.	Package	Packing
TSM2N7002KDCU6 RF	SOT-363	3Kpcs / 7" Reel

### Block Diagram



Dual N-Channel MOSFET

### Absolute Maximum Rating ( $T_A = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	$V_{DS}$	60	V	
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V	
Drain Current	Continuous @ $T_A = 25^\circ C$	$I_D$	300	mA
	Pulsed	$I_{DM}$	800	
Drain Reverse Current	Continuous @ $T_A = 25^\circ C$	$I_{DR}$	300	mA
	Pulsed	$I_{DMR}$	800	
Maximum Power Dissipation	$P_D$	300	mW	
Operating Junction Temperature	$T_J$	+150	$^\circ C$	
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ C$	

### Thermal Performance

Parameter	Symbol	Limit	Unit
Lead Temperature (1/8" from case)	$T_L$	5	S
Junction to Ambient Thermal Resistance (PCB mounted)	$R_{\theta JA}$	625	$^\circ C/W$

### Notes:

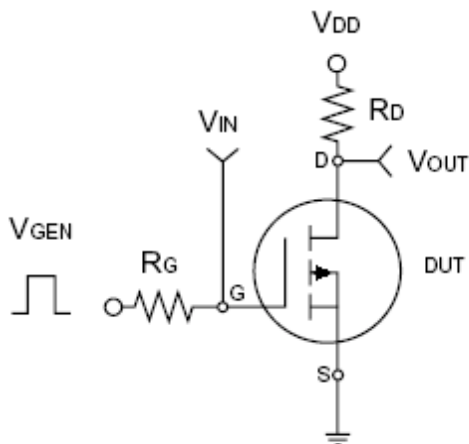
- Pulse width  $\leq 300\mu s$ , Duty cycle  $\leq 2\%$
- When the device is mounted on a glass epoxy board with area measuring 1 x 0.75 x 0.62 inch.
- The power dissipation of the package may result in a continuous drain current.

### Electrical Specifications (Ta = 25°C, unless otherwise noted)

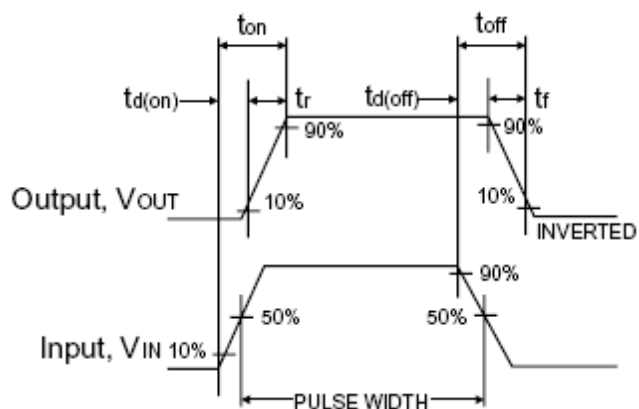
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = 250\mu A$	$BV_{DSS}$	60	--	--	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = 250\mu A$	$V_{GS(TH)}$	1.0	1.5	2.5	V
Gate Body Leakage	$V_{GS} = \pm 20V, V_{DS} = 0V$	$I_{GSS}$	--	--	$\pm 10$	$\mu A$
Zero Gate Voltage Drain Current	$V_{DS} = 60V, V_{GS} = 0V$	$I_{DSS}$	--	--	1.0	$\mu A$
Drain-Source On-State Resistance	$V_{GS} = 10V, I_D = 300mA$	$R_{DS(ON)}$	--	1.2	2	$\Omega$
	$V_{GS} = 4.5V, I_D = 100mA$		--	2	4	
Forward Transconductance	$V_{DS} = 10V, I_D = 200mA$	$g_{fs}$	100	--	--	mS
Diode Forward Voltage	$I_S = 300mA, V_{GS} = 0V$	$V_{SD}$	--	0.8	1.4	V
<b>Dynamic<sup>b</sup></b>						
Total Gate Charge	$V_{DS} = 10V, I_D = 250mA, V_{GS} = 4.5V$	$Q_g$	--	0.4	0.6	nC
Input Capacitance	$V_{DS} = 25V, V_{GS} = 0V, f = 1.0MHz$	$C_{iss}$	--	30	--	pF
Output Capacitance		$C_{oss}$	--	6	--	
Reverse Transfer Capacitance		$C_{rss}$	--	2.5	--	
<b>Switching<sup>c</sup></b>						
Turn-On Delay Time	$V_{DD} = 30V, R_G = 10\Omega, I_D = 200mA, V_{GEN} = 10V,$	$t_{d(on)}$	--	--	25	nS
Turn-Off Delay Time		$t_{d(off)}$	--	--	35	

Notes:

- a. pulse test: PW  $\leq 300\mu s$ , duty cycle  $\leq 2\%$
- b. For DESIGN AID ONLY, not subject to production testing.
- b. Switching time is essentially independent of operating temperature.



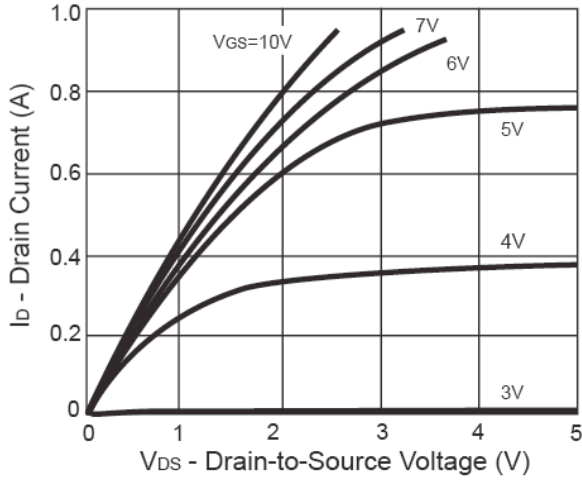
Switching Test Circuit



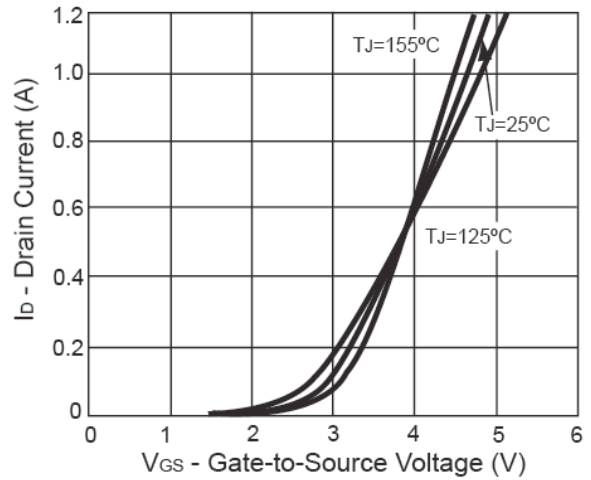
Switchin Waveforms

**Electrical Characteristics Curve** (Ta = 25°C, unless otherwise noted)

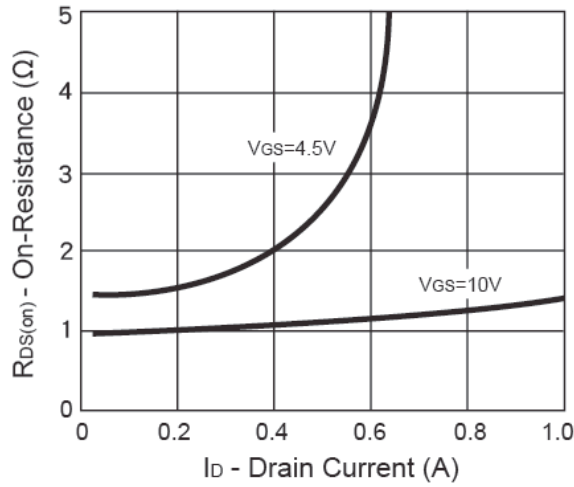
**Output Characteristics**



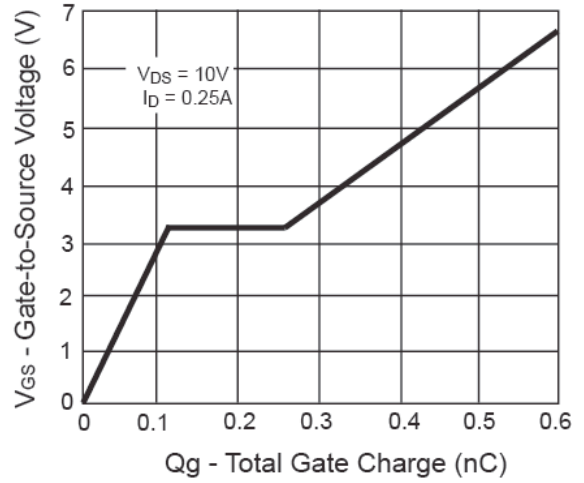
**Transfer Characteristics**



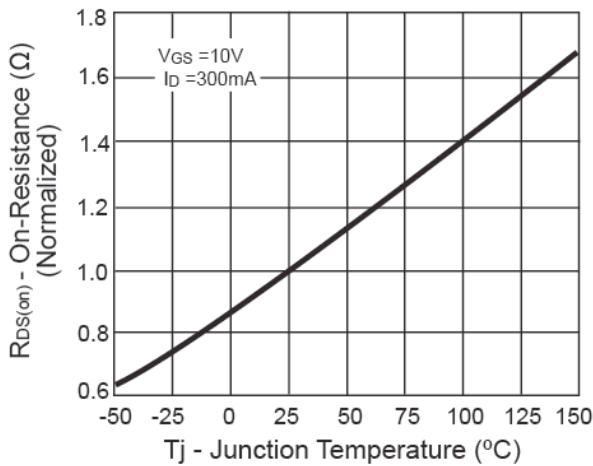
**On-Resistance vs. Drain Current**



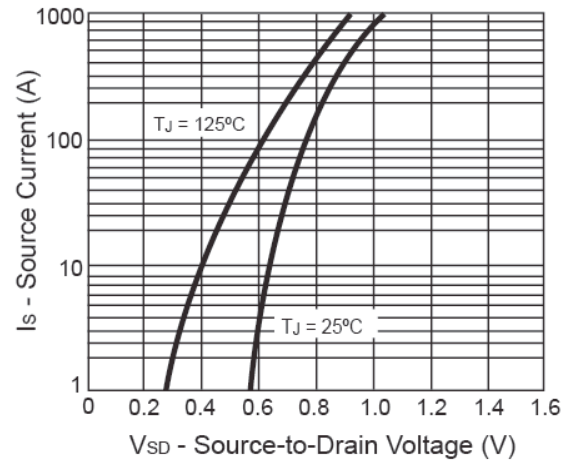
**Gate Charge**



**On-Resistance vs. Junction Temperature**

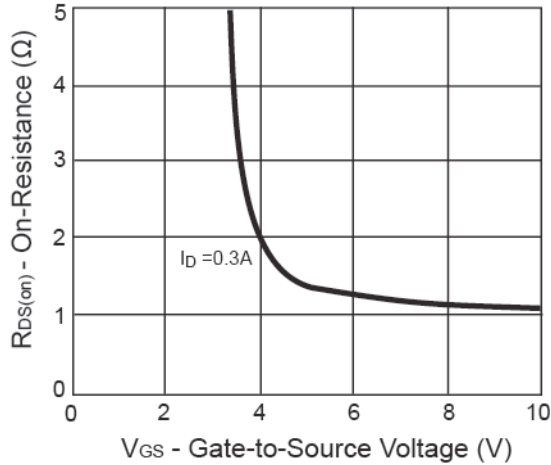


**Source-Drain Diode Forward Voltage**

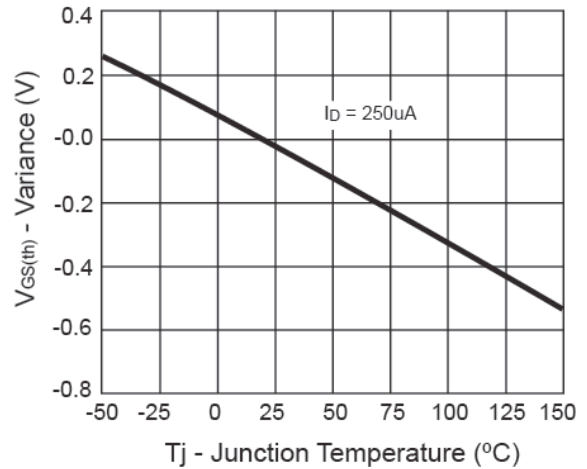


**Electrical Characteristics Curve** (Ta = 25°C, unless otherwise noted)

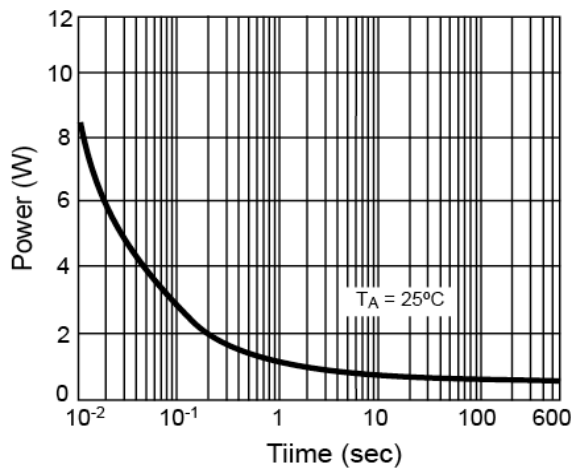
**On-Resistance vs. Gate-Source Voltage**



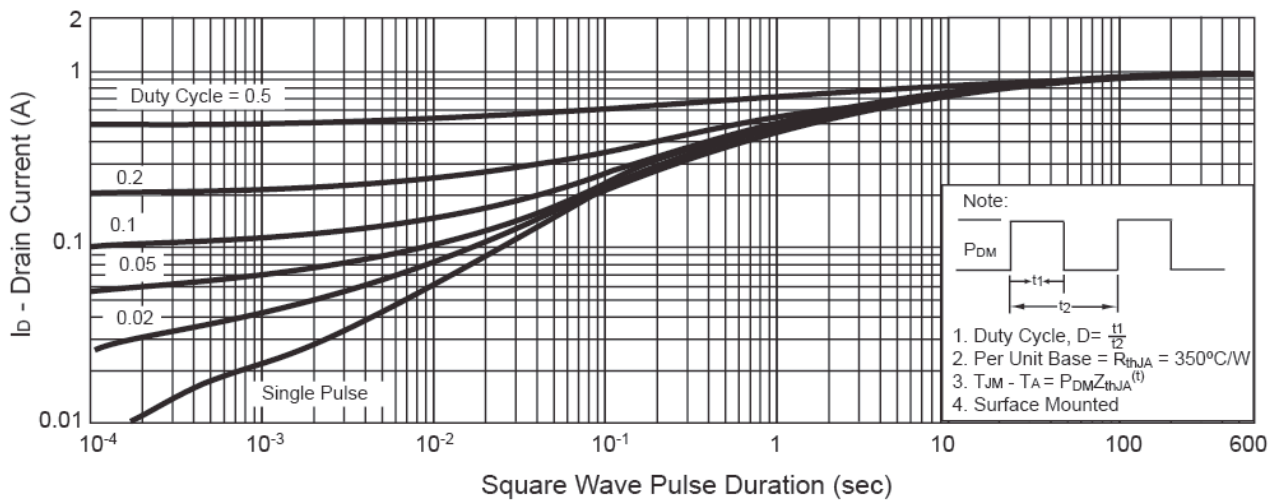
**Threshold Voltage**



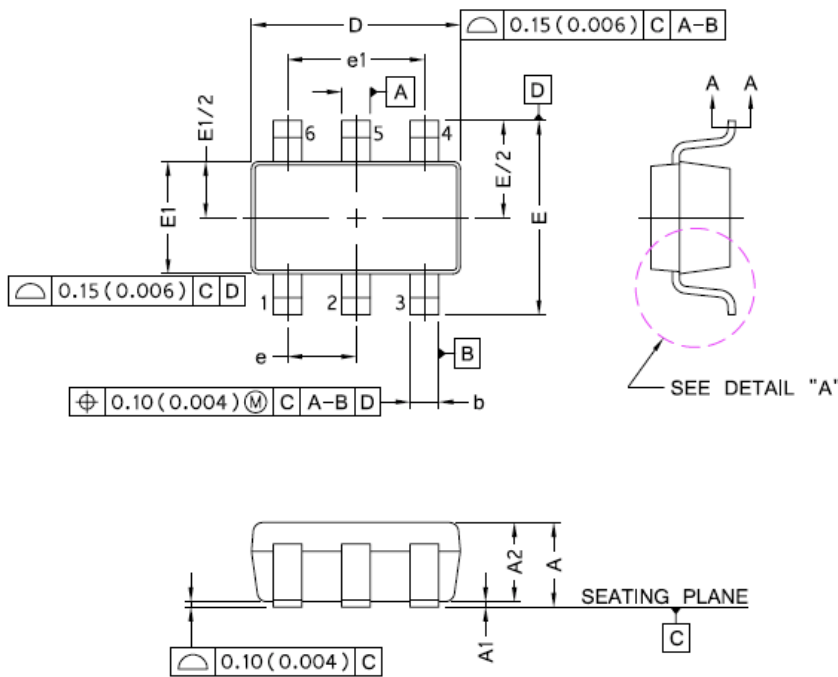
**Single Pulse Power**



**Normalized Thermal Transient Impedance, Junction-to-Ambient**



**SOT-363 Mechanical Drawing**



SOT-363 DIMENSION				
DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX.
A	0.80	1.10	0.031	0.043
A1	0	0.10	0	0.004
A2	0.80	1.00	0.031	0.040
b	0.15	0.30	0.006	0.012
b1	0.15	0.25	0.006	0.010
c	0.08	0.22	0.003	0.009
c1	0.08	0.20	0.003	0.008
D	1.90	2.10	0.074	0.084
E	2.00	2.20	0.078	0.086
E1	1.15	1.35	0.045	0.055
e	0.65 BSC		0.025 BSC	
e1	1.30 BSC		0.051 BSC	
L	0.26	0.46	0.010	0.018
θ	0°	8°	0°	8°
θ1	4°	10°	4°	10°

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