

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)	$R_{DS(on)}$ (m Ω)	I_D (A)
60	2 @ $V_{GS} = 10V$	300
	4 @ $V_{GS} = 4.5V$	200

Features

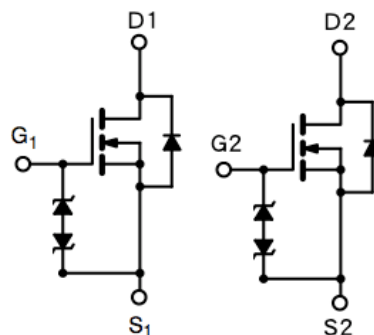
- Low On-Resistance
- ESD Protection
- High Speed Switching
- Low Voltage Drive

Ordering Information

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

Note: "G" denote for Halogen Free Product

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}	± 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:

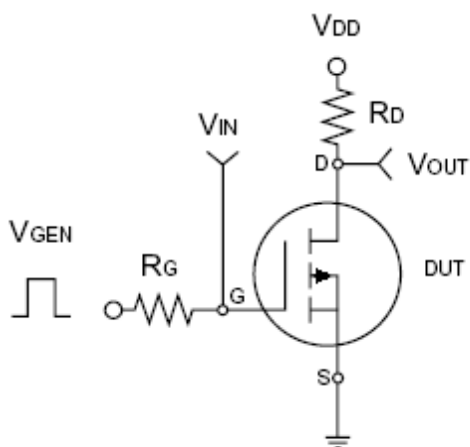
- Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
- When the device is mounted on a glass epoxy board with area measuring 1 x 0.75 x 0.62 inch.
- The power dissipation of the package may result in a continuous drain current.

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

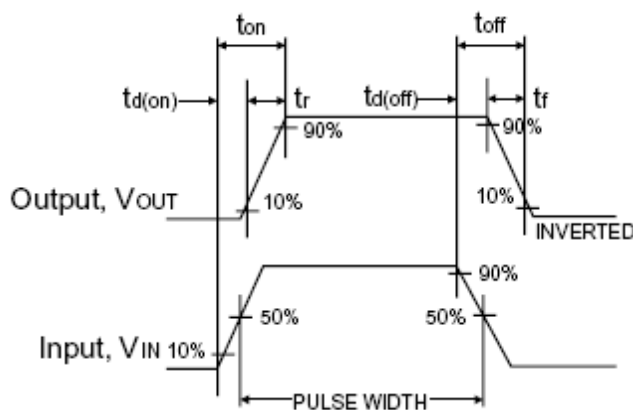
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	BV_{DSS}	60	--	--	V
Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=250\mu A$	$V_{GS(TH)}$	1.0	1.5	2.5	V
Gate Body Leakage	$V_{GS}=\pm 20V, V_{DS}=0V$	I_{GSS}	--	--	± 10	μA
Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$	I_{DSS}	--	--	1.0	μA
Drain-Source On-State Resistance	$V_{GS}=10V, I_D=300mA$	$R_{DS(ON)}$	--	1.2	2	Ω
	$V_{GS}=4.5V, I_D=100mA$		--	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
Dynamic^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	--	
Switching^c						
Turn-On Delay Time	$V_{DD}=30V, R_G=10\Omega$	$t_{d(on)}$	--	--	25	nS
Turn-Off Delay Time	$I_D=200mA, V_{GEN}=10V,$	$t_{d(off)}$	--	--	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.



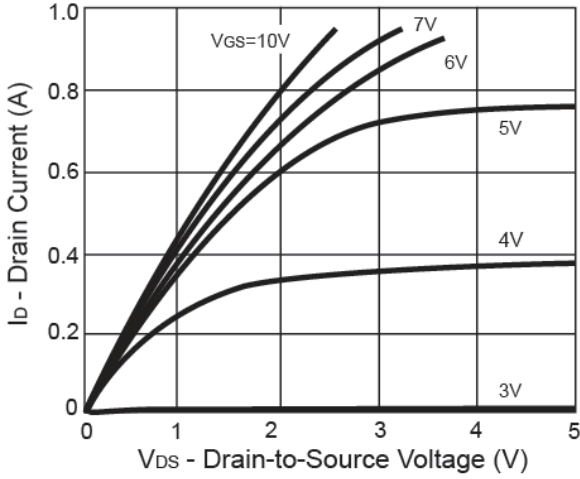
Switching Test Circuit



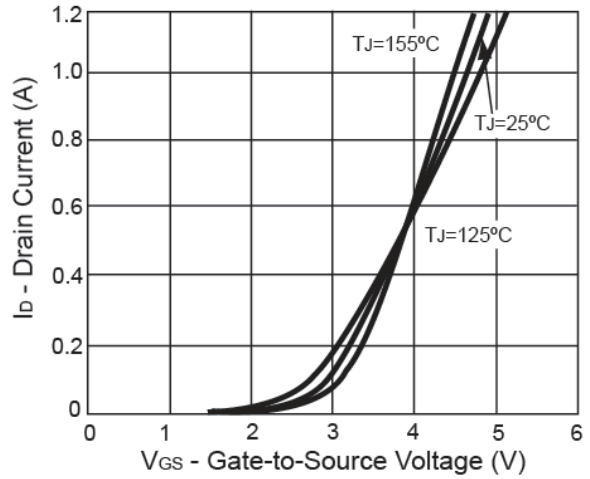
Switchin Waveforms

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

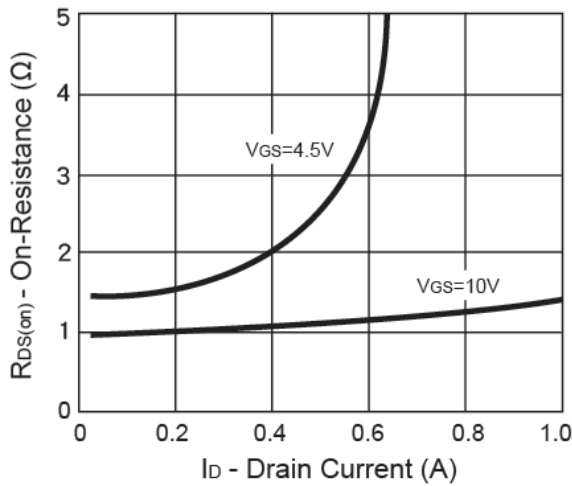
Output Characteristics



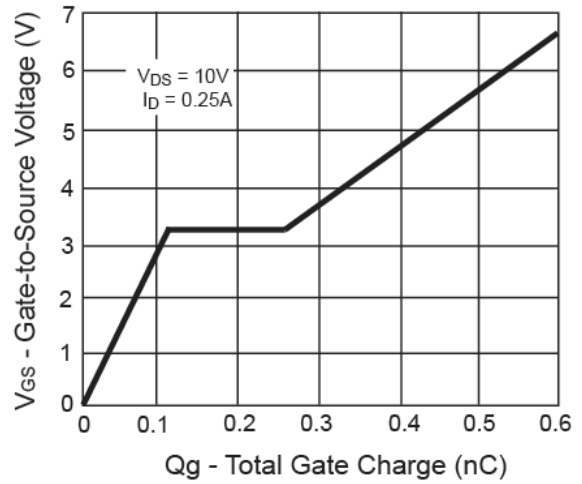
Transfer Characteristics



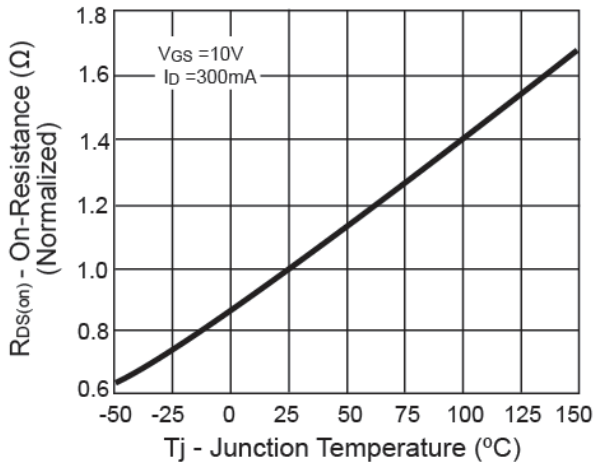
On-Resistance vs. Drain Current



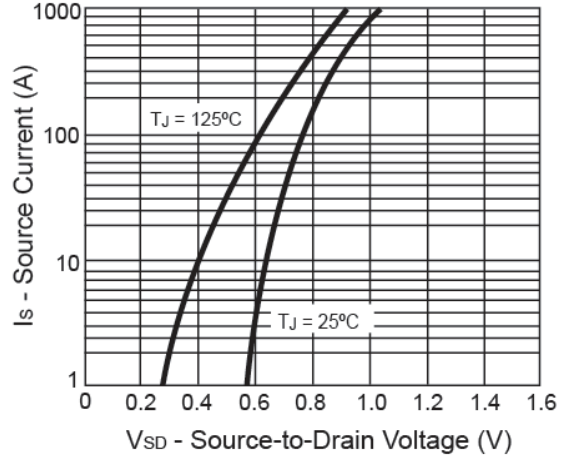
Gate Charge



On-Resistance vs. Junction Temperature

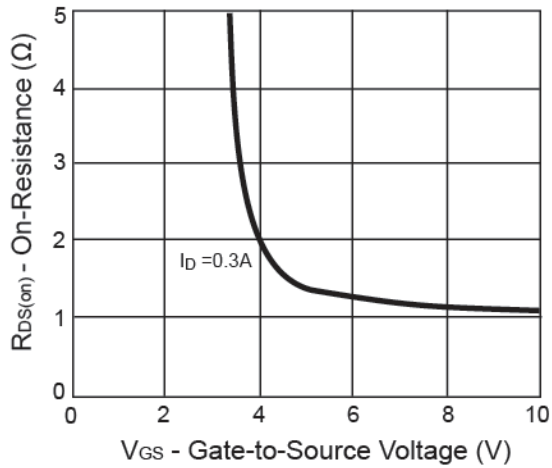


Source-Drain Diode Forward Voltage

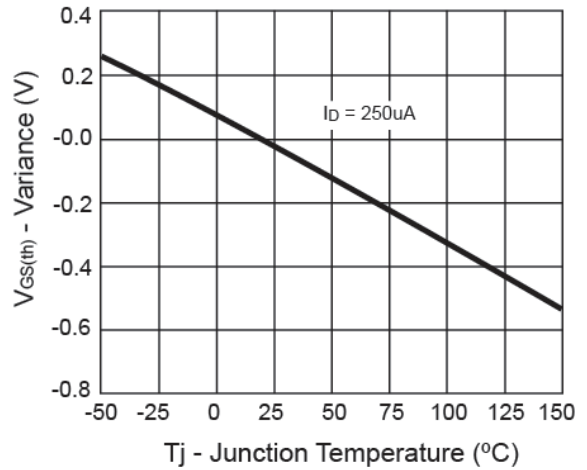


Electrical Characteristics Curve ($T_a = 25^\circ\text{C}$, unless otherwise noted)

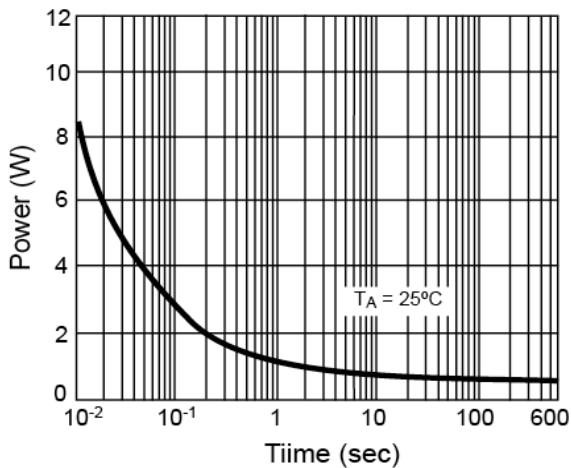
On-Resistance vs. Gate-Source Voltage



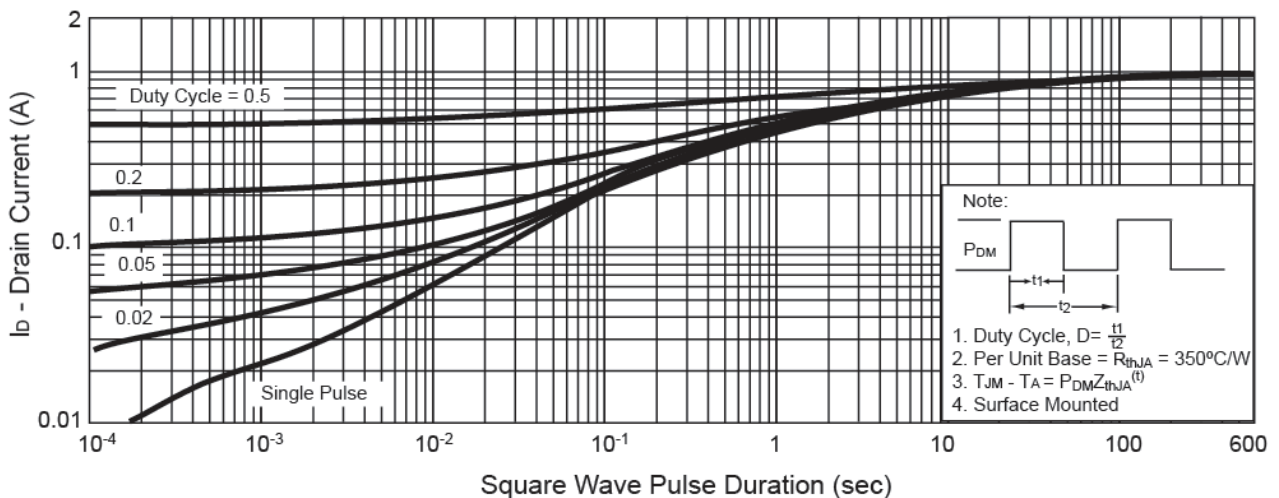
Threshold Voltage



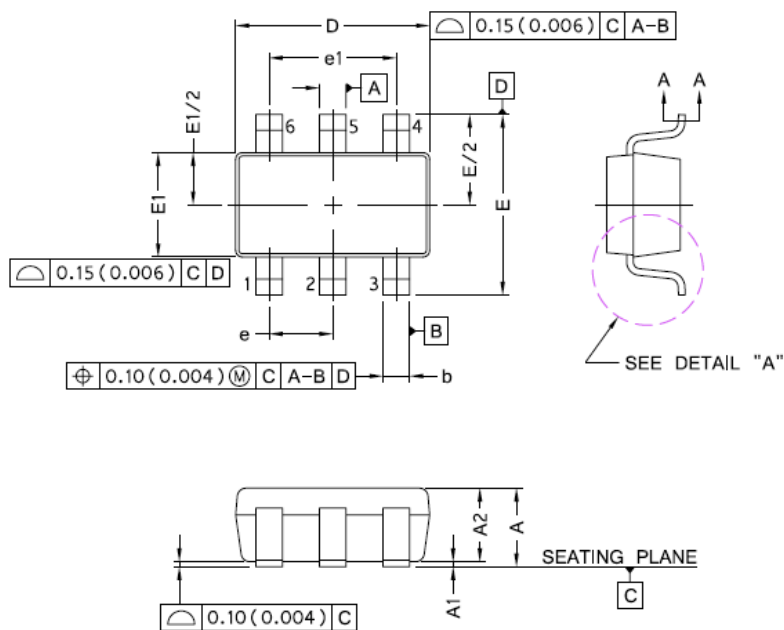
Single Pulse Power



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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