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### SOT-26



### Pin Definition:

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

### Key Parameter Performance

Parameter	Value	Unit
$V_{DS}$	-30	V
$R_{DS(on)}$ (max)	$V_{GS} = -10V$	60
	$V_{GS} = -4.5V$	100
$Q_g$	9.52	nC

### Features

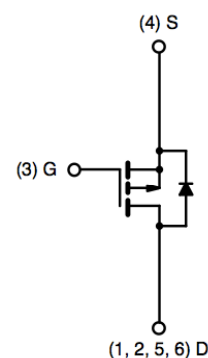
- Advance Trench Process Technology
- High Density Cell Design for Ultra Low On-resistance

### Ordering Information

Part No.	Package	Packing
TSM3457CX6 RFG	SOT-26	3kpcs / 7" Reel

**Note:** "G" denotes for Halogen- and Antimony-free as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds

### Block Diagram



P-Channel MOSFET

### Absolute Maximum Ratings ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-30	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$I_D$	-5	A
Pulsed Drain Current	$I_{DM}$	-20	A
Continuous Source Current (Diode Conduction) <sup>(Note 1,2)</sup>	$I_S$	-1.7	A
Maximum Power Dissipation	$T_A = 25^\circ\text{C}$	2.0	W
	$T_A = 70^\circ\text{C}$	1.3	
Operating Junction Temperature	$T_J$	+150	$^\circ\text{C}$
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	- 55 to +150	$^\circ\text{C}$

### Thermal Performance

Parameter	Symbol	Limit	Unit
Junction to Case Thermal Resistance	$R_{\theta JC}$	30	$^\circ\text{C/W}$
Junction to Ambient Thermal Resistance (PCB mounted)	$R_{\theta JA}$	80	$^\circ\text{C/W}$

### Electrical Specifications ( $T_A = 25^\circ\text{C}$ unless otherwise noted)

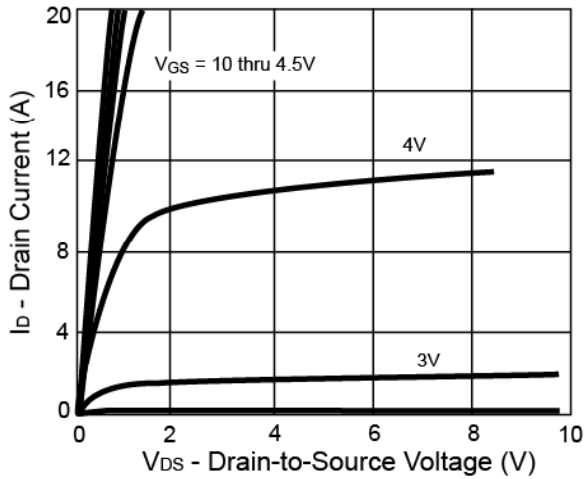
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
Static (Note 3)						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	$BV_{DSS}$	-30	--	--	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(TH)}$	-1.0	-1.5	-3.0	V
Gate Body Leakage	$V_{GS} = \pm 20V, V_{DS} = 0V$	$I_{GSS}$	--	--	$\pm 100$	nA
Zero Gate Voltage Drain Current	$V_{DS} = -24V, V_{GS} = 0V$	$I_{DSS}$	--	--	-1.0	$\mu A$
On-State Drain Current	$V_{DS} = -5V, V_{GS} = -10V$	$I_{D(ON)}$	-20	--	--	A
Drain-Source On-State Resistance	$V_{GS} = -4.5V, I_D = -3.7A$	$R_{DS(ON)}$	--	82	100	m $\Omega$
	$V_{GS} = -10V, I_D = -5A$		--	50	60	
Forward Transconductance	$V_{DS} = -15V, I_D = -5A$	$g_{fs}$	--	10	--	S
Diode Forward Voltage	$I_S = -1.7A, V_{GS} = 0V$	$V_{SD}$	--	-0.8	-1.2	V
Dynamic (Note 4,5)						
Total Gate Charge	$V_{DS} = -15V, I_D = -3.7A,$ $V_{GS} = -10V$	$Q_g$	--	9.52		nC
Gate-Source Charge		$Q_{gs}$	--	3.43	--	
Gate-Drain Charge		$Q_{gd}$	--	1.71	--	
Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1.0MHz$	$C_{iss}$	--	551.57	--	pF
Output Capacitance		$C_{oss}$	--	90.96	--	
Reverse Transfer Capacitance		$C_{rss}$	--	60.79	--	
Switching (Note 4,5)						
Turn-On Delay Time	$V_{DD} = -15V, R_L = 15\Omega,$ $I_D = -1A, V_{GEN} = -10V,$ $R_G = 6\Omega$	$t_{d(on)}$	--	10.8	--	ns
Turn-On Rise Time		$t_r$	--	2.33	--	
Turn-Off Delay Time		$t_{d(off)}$	--	22.53	--	
Turn-Off Fall Time		$t_f$	--	3.87	--	

#### Notes:

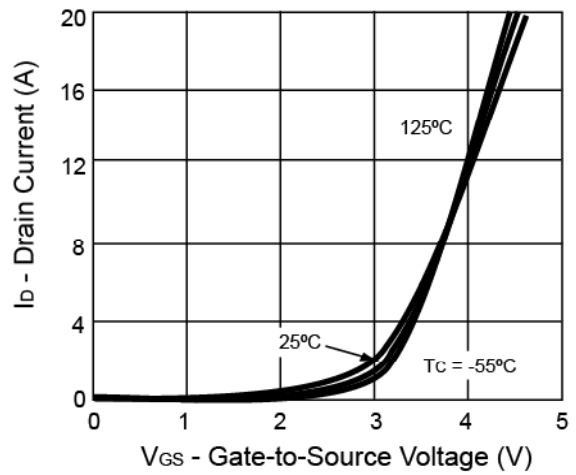
1. Pulse width limited by the Maximum junction temperature
2. Surface Mounted on FR4 Board,  $t \leq 5$  sec.
3. pulse test:  $PW \leq 300\mu S$ , duty cycle  $\leq 2\%$
4. For DESIGN AID ONLY, not subject to production testing.
5. Switching time is essentially independent of operating temperature.

### Electrical Characteristics Curves

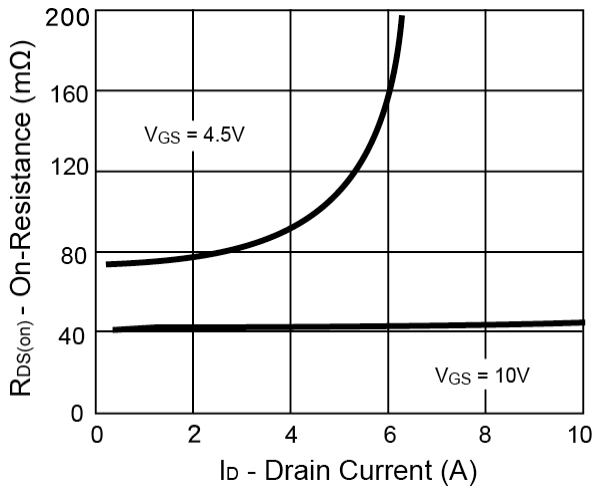
**Output Characteristics**



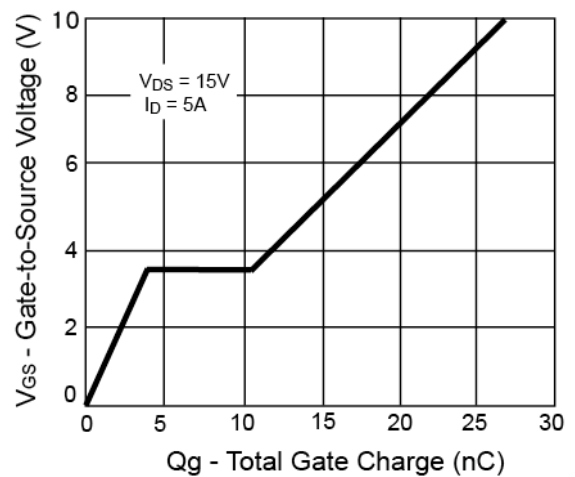
**Transfer Characteristics**



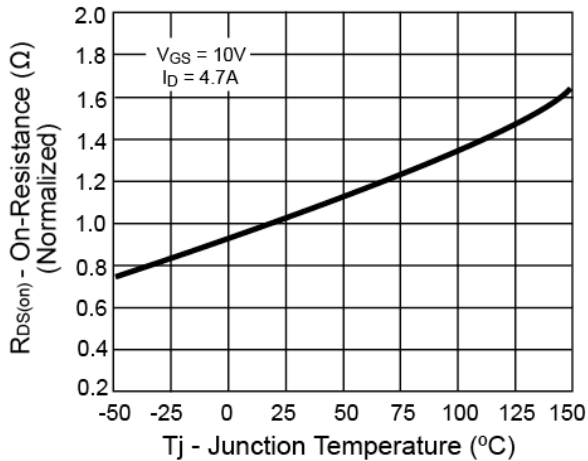
**On-Resistance vs. Drain Current**



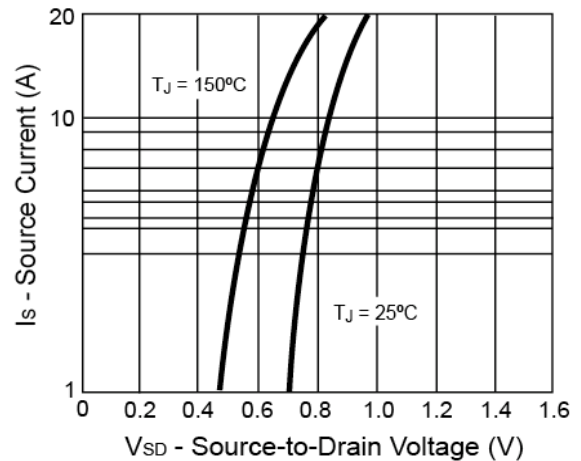
**Gate Charge**



**On-Resistance vs. Junction Temperature**

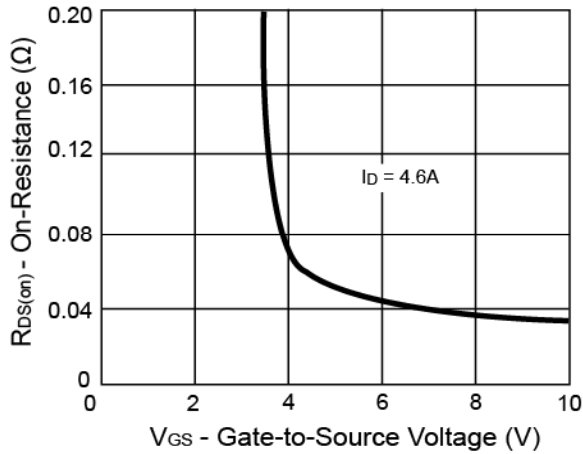


**Source-Drain Diode Forward Voltage**

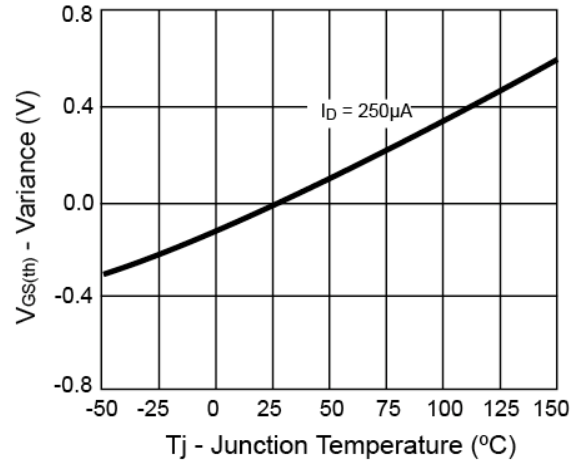


### Electrical Characteristics Curves

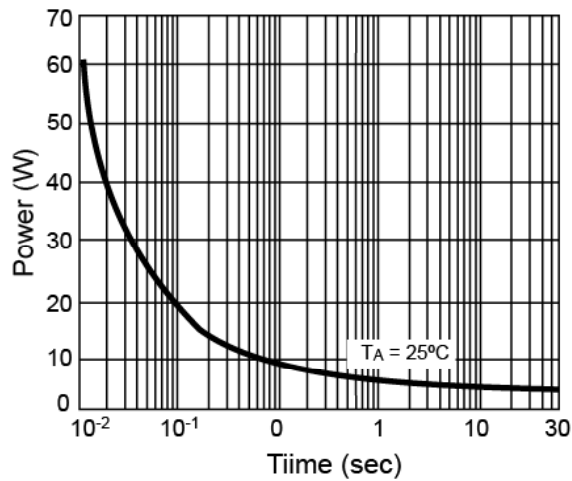
**On-Resistance vs. Gate-Source Voltage**



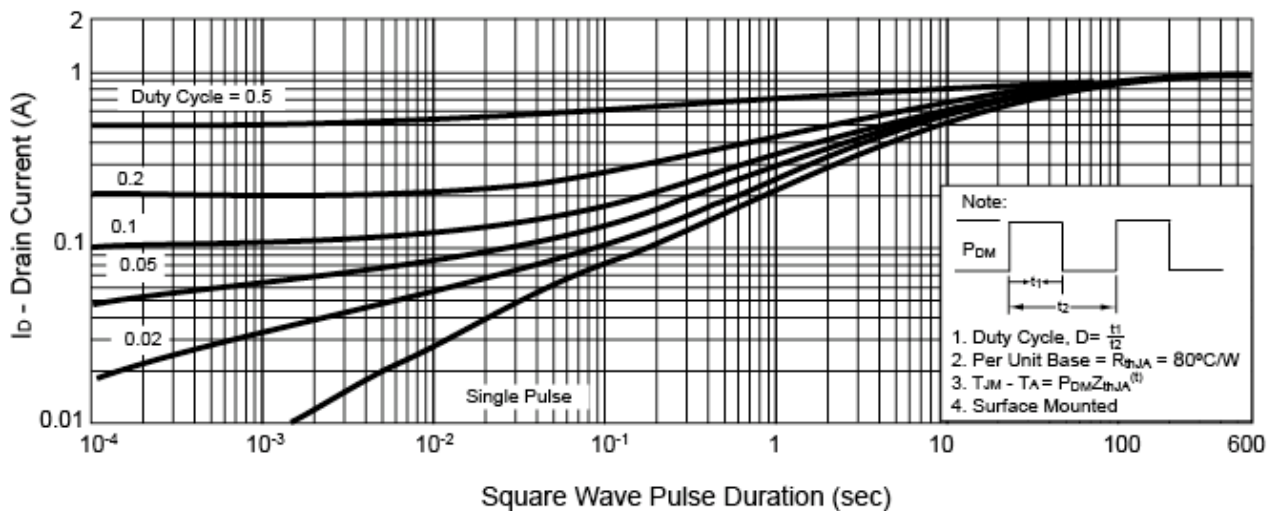
**Threshold Voltage**



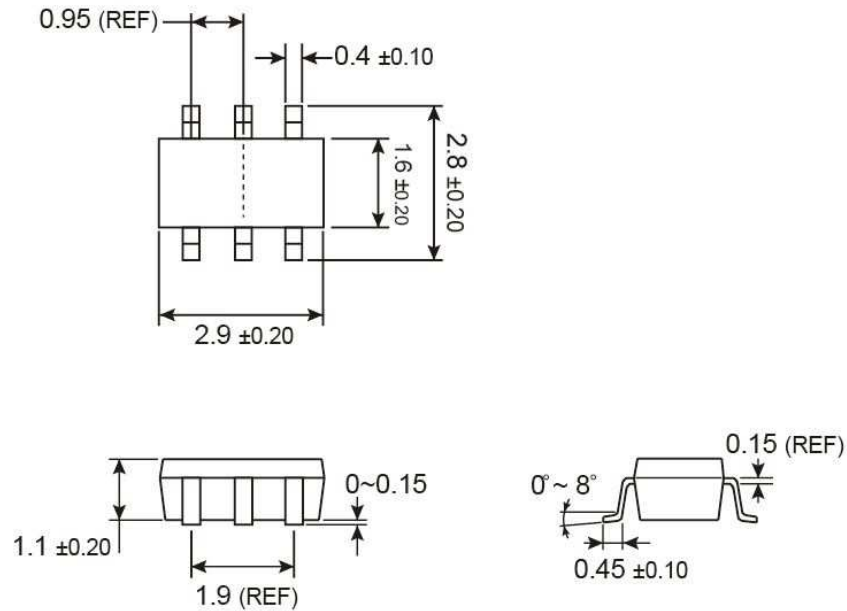
**Single Pulse Power**



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

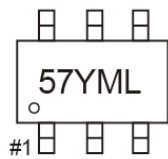


## SOT-26 Mechanical Drawing



Unit: Millimeters

## Marking Diagram



- 57** = Device Code
- Y** = Year Code
- M** = Month Code for Halogen Free Product
  - O** =Jan    **P** =Feb    **Q** =Mar    **R** =Apr
  - S** =May    **T** =Jun    **U** =Jul    **V** =Aug
  - W** =Sep    **X** =Oct    **Y** =Nov    **Z** =Dec
- L** = Lot Code

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