

**Pin Definition:**

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

### Key Parameter Performance

Parameter	Value	Unit
$V_{DS}$	-20	V
$R_{DS(on)}$ (max)	$V_{GS} = -4.5V$	26
	$V_{GS} = -2.5V$	32
	$V_{GS} = -1.8V$	40
$Q_g$	27	nC

### Features

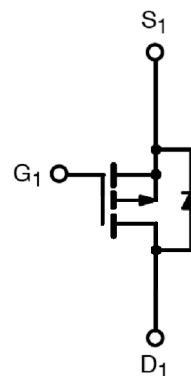
- Fast switching
- Suitable for -1.8V drive applications

### Ordering Information

Part No.	Package	Packing
TSM260P02CX6 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 ( $T_C = 25^\circ C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 10$	V
Continuous Drain Current	$I_D$	$T_C = 25^\circ C$	-6.5
		$T_C = 100^\circ C$	-4.1
Pulsed Drain Current <sup>(Note 1)</sup>	$I_{DM}$	-26	A
Power Dissipation @ $T_C = 25^\circ C$	$P_D$	1.56	W
Operating Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ C$

### Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance - Junction to Ambient	$R_{JA}$	80	$^\circ C/W$

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

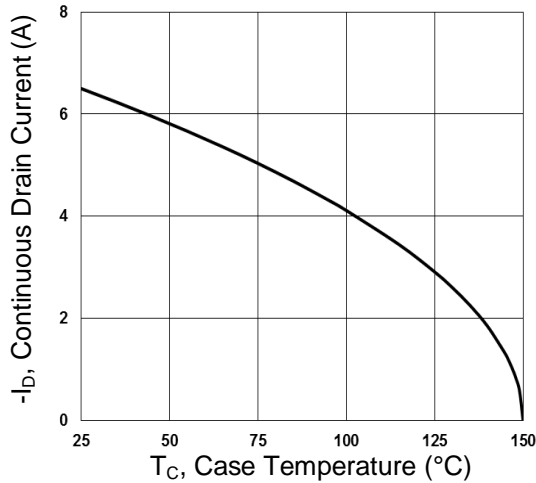
Parameter	Conditions	Symbol	Min	Typ	Max	Unit
<b>Static</b>						
Drain-Source Breakdown Voltage	$V_{GS} = 0V, I_D = -250\mu A$	$BV_{DSS}$	-20	--	--	V
Drain-Source On-State Resistance	$V_{GS} = -4.5V, I_D = -5A$	$R_{DS(ON)}$	--	21	26	m
	$V_{GS} = -2.5V, I_D = -4A$		--	26	32	
	$V_{GS} = -1.8V, I_D = -3A$		--	32	40	
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(TH)}$	-0.3	-0.6	-1.0	V
Zero Gate Voltage Drain Current	$V_{DS} = -20V, V_{GS} = 0V$	$I_{DSS}$	--	--	-1	$\mu A$
	$V_{DS} = -16V, T_J = 125^\circ\text{C}$		--	--	-10	
Gate Body Leakage	$V_{GS} = \pm 10V, V_{DS} = 0V$	$I_{GSS}$	--	--	$\pm 100$	nA
Forward Transconductance <sup>(Note 2)</sup>	$V_{DS} = -10V, I_S = -5A$	$g_{fs}$	--	15	--	S
<b>Dynamic</b>						
Total Gate Charge <sup>(Note 2,3)</sup>	$V_{DS} = -10V, I_D = -5A,$ $V_{GS} = -4.5V$	$Q_g$	--	19.5	--	nC
Gate-Source Charge <sup>(Note 2,3)</sup>		$Q_{gs}$	--	2	--	
Gate-Drain Charge <sup>(Note 2,3)</sup>		$Q_{gd}$	--	3.6	--	
Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V,$ $f = 1.0\text{MHz}$	$C_{iss}$	--	1670	--	pF
Output Capacitance		$C_{oss}$	--	220	--	
Reverse Transfer Capacitance		$C_{rss}$	--	120	--	
<b>Switching</b>						
Turn-On Delay Time <sup>(Note 2,3)</sup>	$V_{DD} = -10V, I_D = -1A,$ $V_{GS} = -4.5V, R_{GEN} = 25$	$t_{d(on)}$	--	10.4	--	ns
Turn-On Rise Time <sup>(Note 2,3)</sup>		$t_r$	--	37.5	--	
Turn-Off Delay Time <sup>(Note 2,3)</sup>		$t_{d(off)}$	--	89.1	--	
Turn-Off Fall Time <sup>(Note 2,3)</sup>		$t_f$	--	24.6	--	
<b>Source-Drain Diode Ratings and Characteristic</b>						
Maximum Continuous Drain-Source Diode Forward Current	Integral reverse diode in the MOSFET	$I_S$	--	--	-6.5	A
Maximum Pulse Drain-Source Diode Forward Current		$I_{SM}$	--	--	-26	A
Diode-Source Forward Voltage	$V_{GS} = 0V, I_S = -1A$	$V_{SD}$	--	--	-1	V

#### Note:

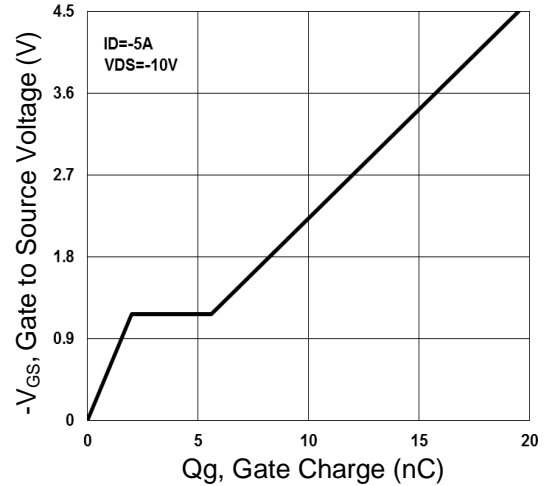
1. Pulse width limited by safe operating area
2. Pulse test: pulse width  $m300\mu s$ , duty cycle  $m2\%$
3. Switching time is essentially independent of operating temperature.

### Electrical Characteristics Curve

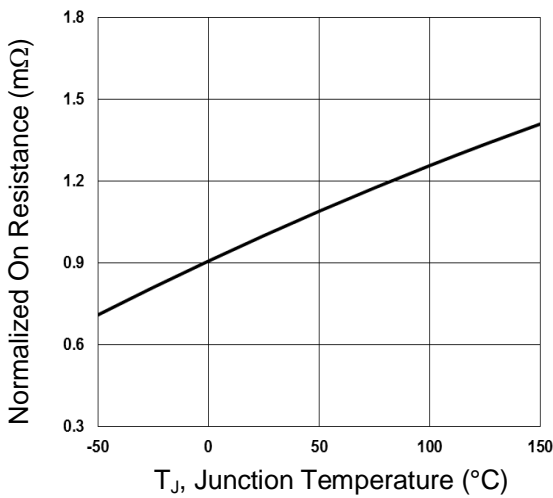
**Continuous Drain Current vs.  $T_C$**



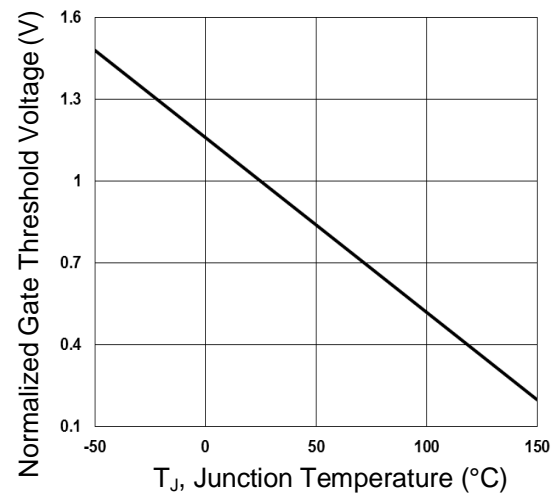
**Gate Charge**



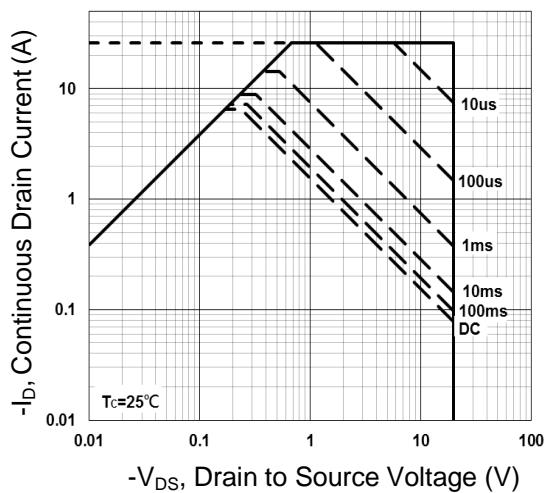
**On-Resistance vs. Junction Temperature**



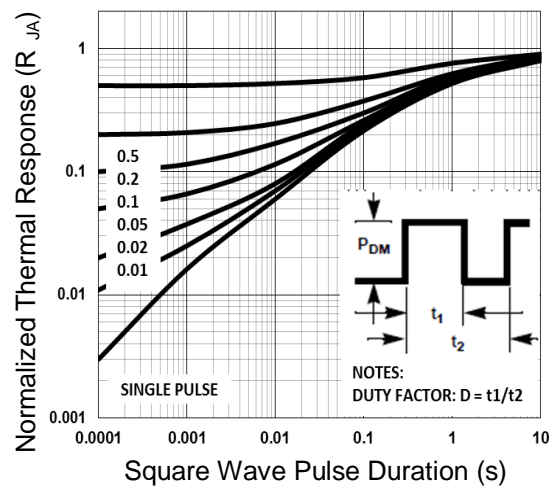
**Threshold Voltage vs. Junction Temperature**



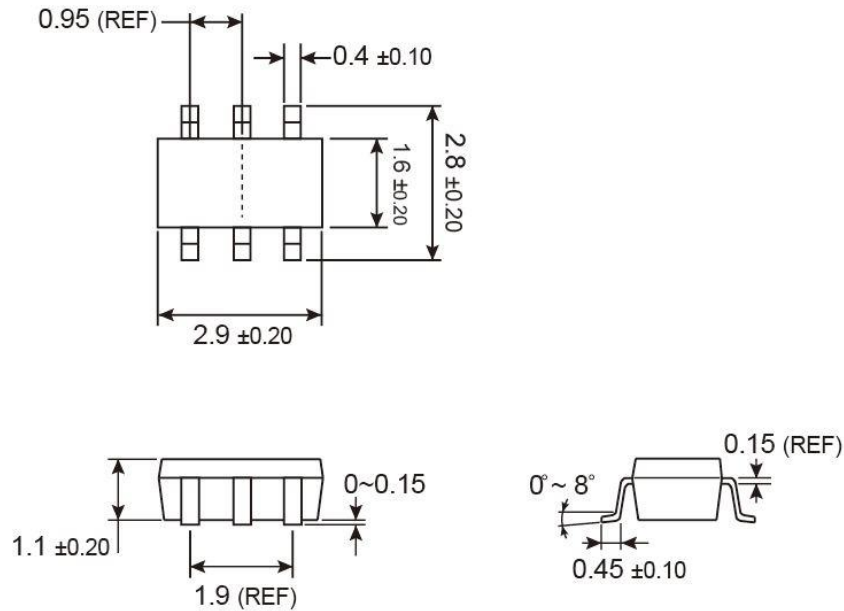
**Maximum Safe Operating Area**



**Normalized Thermal Transient Impedance Curve**

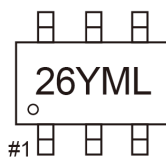


### SOT-26 Mechanical Drawing



Unit: Millimeters

### Marking Diagram



- 26** = 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

# TSM260P02CX6

## 20V P-Channel Power MOSFET

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