P-Channel Power MOSFET

-20V, -6.5A, 26mΩ

FEATURES

- Fast switching
- Suitable for -1.8V Gate Drive Applications
- Pb-free plating
- RoHS compliant
- Halogen-free mold compound

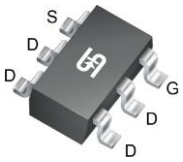
KEY PERFORMANCE PARAMETERS			
PARAMETER		**VALUE**	**UNIT**
V_{DS}		-20	V
I_D		-6.5	A
$R_{DS(on)}$ (max)	V_{GS} = -4.5V	26	mΩ
	V_{GS} = -2.5V	32	
	V_{GS} = -1.8V	40	
Q_g		19.5	nC

APPLICATION

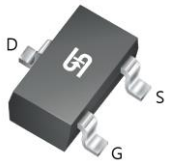
- Battery Pack
- Portable Devices

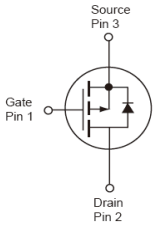
Pb-Free RoHS COMPLIANT HALOGEN FREE

SOT-26



SOT-23





Notes: Moisture sensitivity level: level 3. Per J-STD-020

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)				
PARAMETER		**SYMBOL**	**LIMIT**	**UNIT**
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±10	V
Continuous Drain Current	T_C = 25°C	I_D	-6.5	A
	T_C = 100°C		-4.1	
Pulsed Drain Current (Note 1)		I_{DM}	-26	A
Total Power Dissipation	T_C = 25°C	P_{DTOT}	1.56	W
Operating Junction Temperature		T_J	150	ºC
Operating Junction and Storage Temperature Range		T_J, T_{STG}	- 55 to +150	°C

THERMAL PERFORMANCE			
PARAMETER	**SYMBOL**	**LIMIT**	**UNIT**
Junction to Ambient Thermal Resistance	$R_{\Theta JA}$	80	°C/W

Notes: $R_{\Theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistances. $R_{\Theta JA}$ is guaranteed by design while $R_{\Theta CA}$ is determined by the user's board design. $R_{\Theta JA}$ is shown for single device operation on FR-4 PCB in still air.

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)						
PARAMETER	**CONDITIONS**	**SYMBOL**	**MIN**	**TYP**	**MAX**	**UNIT**
Static (Note 2)						
Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = -250μA	BV_{DSS}	-20	--	--	V
Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = -250μA	$V_{GS(TH)}$	-0.3	-0.6	-1.0	V
Gate Body Leakage	V_{GS} = ±10V, V_{DS} = 0V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS} = -20V, V_{GS} = 0V	I_{DSS}	--	--	-1	μA
	V_{DS} = -16V, T_J = 125ºC		--	--	-10	
Drain-Source On-State Resistance	V_{GS} = -4.5V, I_D = -5A	$R_{DS(on)}$	--	21	26	mΩ
	V_{GS} = -2.5V, I_D = -4A		--	26	32	
	V_{GS} = -1.8V, I_D = -3A		--	32	40	
Forward Transconductance	V_{DS} = -10V, I_S = -5A	g_{fs}	--	15	--	S
Dynamic (Note 3)						
Total Gate Charge	V_{DS} = -10V, I_D = -5A, V_{GS} =- 4.5V	Q_g	--	19.5	--	nC
Gate-Source Charge		Q_{gs}	--	2	--	
Gate-Drain Charge		Q_{gd}	--	3.6	--	
Input Capacitance	V_{DS} = -15V, V_{GS} = 0V, F = 1.0MHz	C_{iss}	--	1670	--	pF
Output Capacitance		C_{oss}	--	220	--	
Reverse Transfer Capacitance		C_{rss}	--	120	--	
Switching						
Turn-On Delay Time	V_{DD} = -10V, I_D = -1A, V_{GS} = -4.5V, R_{GEN} =25Ω	$t_{d(on)}$	--	10.4	--	ns
Turn-On Rise Time		t_r	--	37.5	--	
Turn-Off Delay Time		$t_{d(off)}$	--	89.1	--	
Turn-Off Fall Time		t_f	--	24.6	--	
Source-Drain Diode						
Forward Voltage	V_{GS} = 0V, I_S = -1A	V_{SD}	--	--	-1	V
Continuous Forward Current	Integral reverse diode in the MOSFET	I_S	--	--	-6.5	A
Pulse Forward Current		I_{SM}	--	--	-26	A

Notes:

1. Pulse width limited by safe operating area
2. Pulse test: PW ≤ 300μs, duty cycle ≤ 2%
3. Switching time is essentially independent of operating temperature.

ORDERING INFORMATION

PART NO.	PACKAGE	PACKING
TSM260P02CX RFG	SOT-23	3,000pcs / 7” Reel
TSM260P02CX6 RFG	SOT-26	3,000pcs / 7” Reel

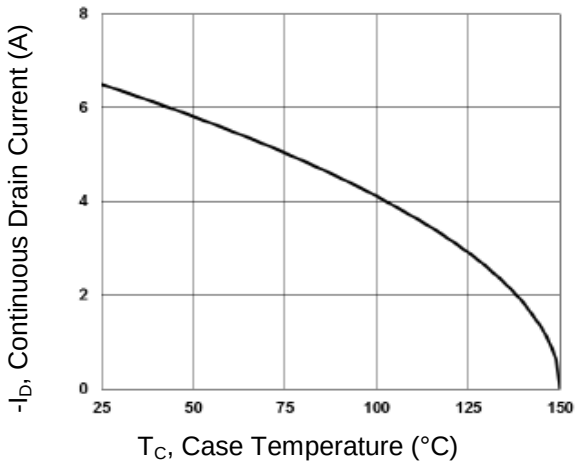
Note:

1. Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
2. Halogen-free according to IEC 61249-2-21 definition

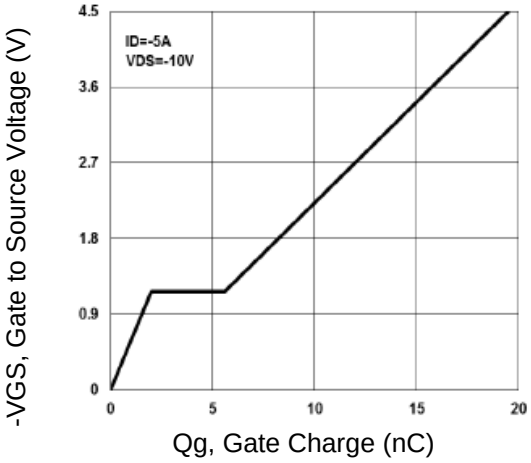
CHARACTERISTICS CURVES

(T_C = 25°C unless otherwise noted)

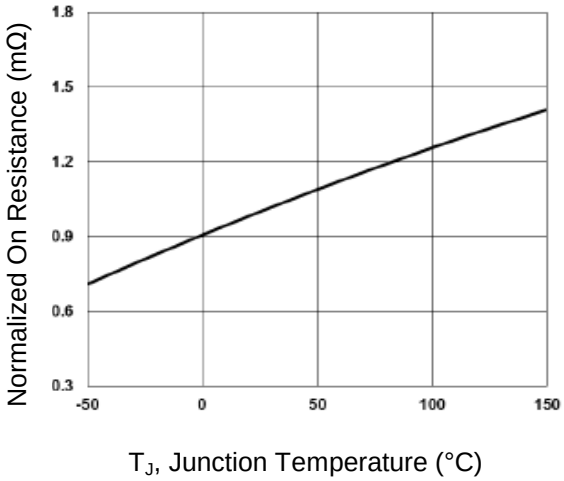
Continuous Drain Current vs. T_C



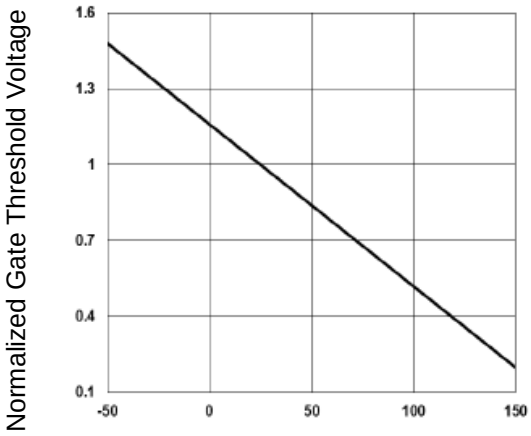
Gate Charge



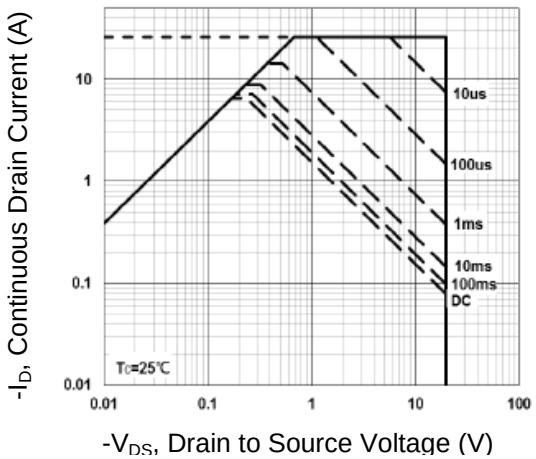
On-Resistance vs. Junction Temperature



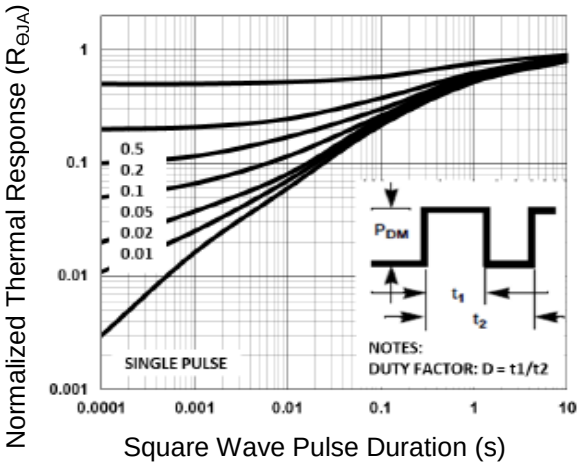
Threshold Voltage vs. Junction Temperature



Maximum Safe Operating Area

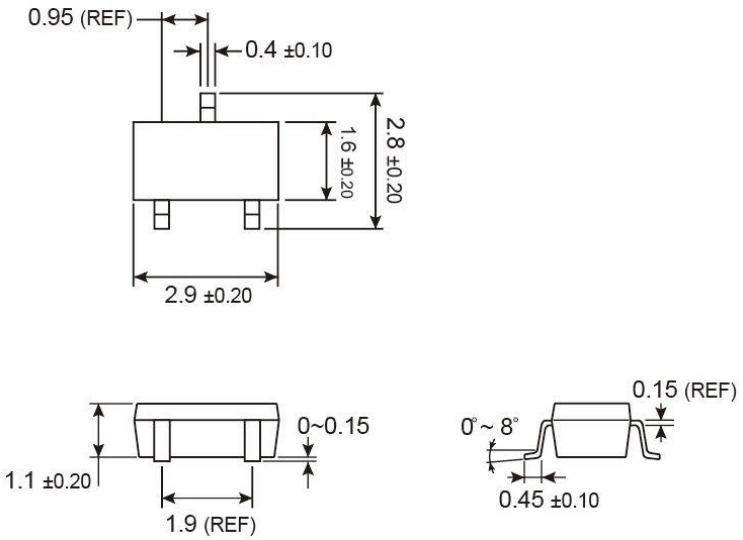


Normalized Thermal Transient Impedance Curve

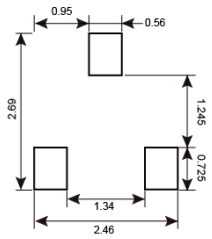


PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

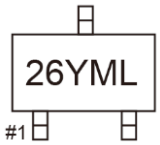
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SUGGESTED PAD LAYOUT (Unit: Millimeters)



MARKING DIAGRAM



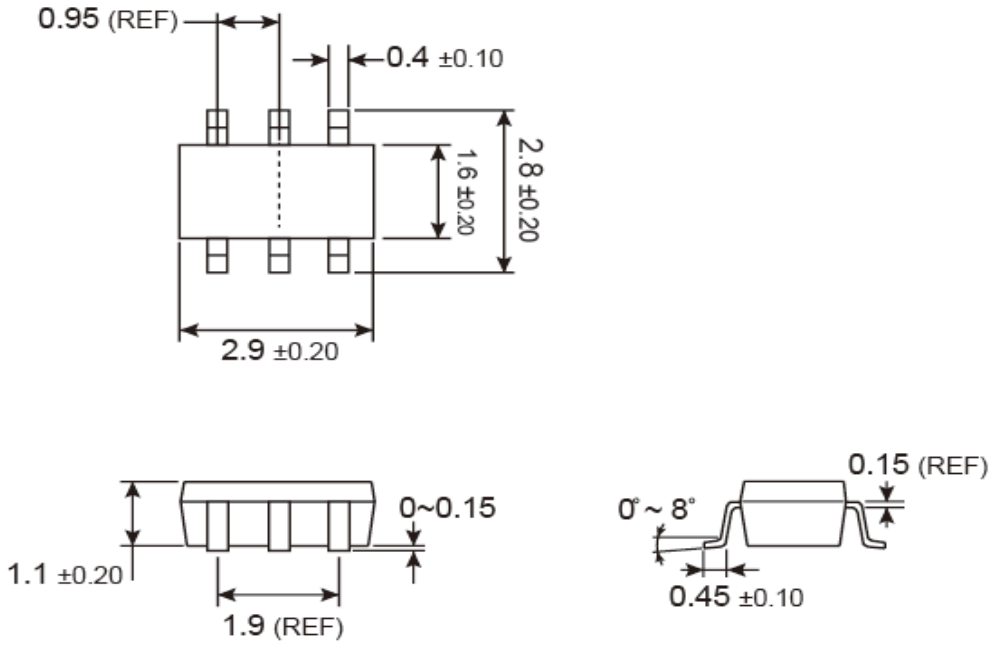
26 = Device Code
Y = Year Code
M = Month Code for Halogen Free Product

O	=Jan	**P**	=Feb	**Q**	=Mar	**R**	=Apr
S	=May	**T**	=Jun	**U**	=Jul	**V**	=Aug
W	=Sep	**X**	=Oct	**Y**	=Nov	**Z**	=Dec

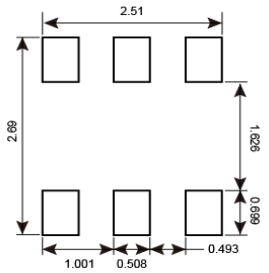
L = Lot Code

PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

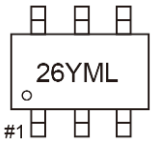
SOT-26



SUGGESTED PAD LAYOUT (Unit: Millimeters)



MARKING DIAGRAM



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L = Lot Code (1~9, A~Z)

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