

P-Channel Power MOSFET

-20V, -6.5A, 26mΩ

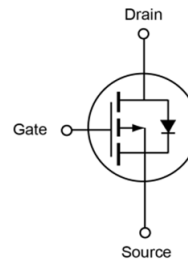
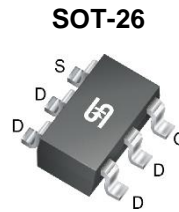
FEATURES

- Fast switching
- Suitable for -1.8V Gate Drive Applications
- Pb-free plating
- RoHS Compliant
- Halogen-free

APPLICATIONS

- Battery Pack
- Portable Devices
- High-side loadswitch

KEY PERFORMANCE PARAMETERS		
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	17	nC



Note: MSL 1 (Moisture Sensitivity Level) per J-STD-020

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ unless otherwise noted)			
PARAMETER	SYMBOL	LIMIT	UNIT
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Continuous Drain Current	I_D	$T_A = 25^\circ C$	-6.5
		$T_A = 100^\circ C$	-4.1
Pulsed Drain Current (Note 1)	I_{DM}	-26	A
Total Power Dissipation @ $T_A = 25^\circ C$	P_D	1.6	W
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ C$

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	LIMIT	UNIT
Junction to Ambient Thermal Resistance (Note 2)	$R_{\theta JA}$	80	$^\circ C/W$

Notes:

1. Pulse Width $\leq 100\mu s$.
2. Device on a PCB FR4 with 1 in² (single layer, 2 oz thickness) copper area for drain connection.

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ 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}	-20	--	--	V
Gate Threshold Voltage	$V_{DS} = V_{GS}, I_D = -250\mu A$	$V_{GS(TH)}$	-0.3	-0.6	-1.0	V
Gate-Source Leakage Current	$V_{GS} = \pm 10V, V_{DS} = 0V$	I_{GSS}	--	--	± 100	nA
Drain-Source Leakage Current	$V_{DS} = -20V, V_{GS} = 0V$	I_{DSS}	--	--	-1	μA
	$V_{DS} = -16V, T_J = 125^\circ\text{C}$		--	--	-10	
Drain-Source On-State Resistance (Note 3)	$V_{GS} = -4.5V, I_D = -5A$	$R_{DS(on)}$	--	19	26	m Ω
	$V_{GS} = -2.5V, I_D = -4A$		--	24	32	
	$V_{GS} = -1.8V, I_D = -3A$		--	32	40	
Forward Transconductance (Note 3)	$V_{DS} = -10V, I_D = -5A$	g_{fs}	--	16	--	S
Dynamic (Note 4)						
Total Gate Charge	$V_{DS} = -10V, I_D = -5A, V_{GS} = -4.5V$	Q_g	--	17	--	nC
Gate-Source Charge		Q_{gs}	--	2.2	--	
Gate-Drain Charge		Q_{gd}	--	3.7	--	
Input Capacitance	$V_{DS} = -15V, V_{GS} = 0V, f = 1.0\text{MHz}$	C_{iss}	--	1661	--	pF
Output Capacitance		C_{oss}	--	217	--	
Reverse Transfer Capacitance		C_{rss}	--	138	--	
Switching (Note 5)						
Turn-On Delay Time	$V_{DD} = -10V, R_G = 25\Omega, I_D = -1A, V_{GS} = -4.5V$	$t_{d(on)}$	--	9.4	--	ns
Turn-On Rise Time		t_r	--	16	--	
Turn-Off Delay Time		$t_{d(off)}$	--	102	--	
Turn-Off Fall Time		t_f	--	49	--	
Source-Drain Diode						
Forward Voltage (Note 3)	$I_S = -1A, V_{GS} = 0V$	V_{SD}	--	--	-1	V

Notes:

- Pulse test: Pulse Width $\leq 300\mu s$, duty cycle $\leq 2\%$.
- Defined by design. Not subject to production test.
- Switching time is essentially independent of operating temperature.

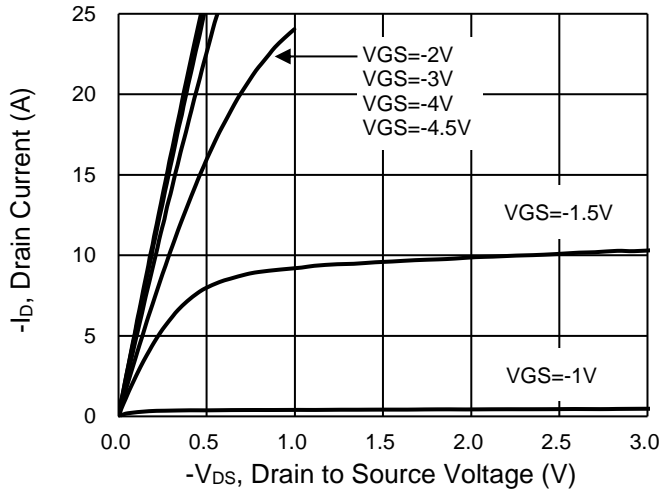
ORDERING INFORMATION

ORDERING CODE	PACKAGE	PACKING
TSM260P02CX6 RFG	SOT-26	3000pcs / 7" Reel

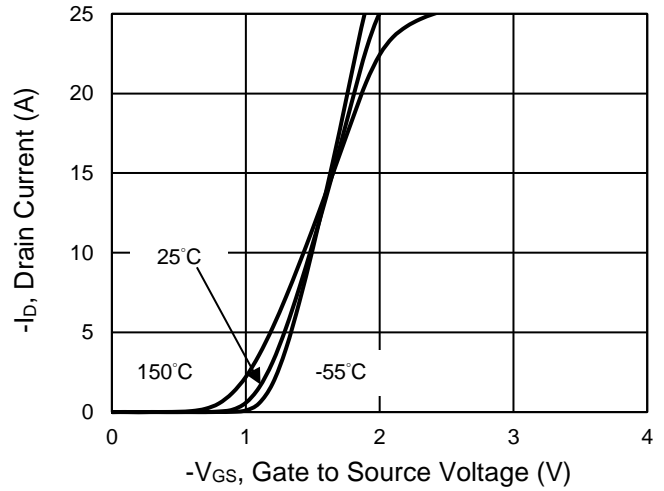
CHARACTERISTICS CURVES (P-Channel)

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

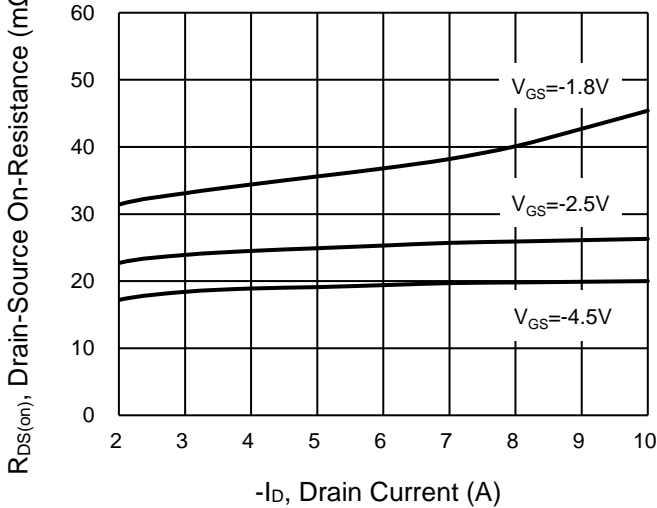
Output Characteristics



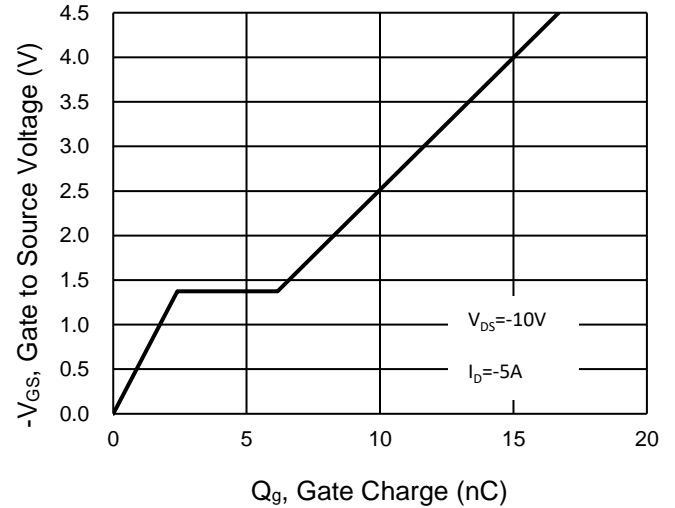
Transfer Characteristics



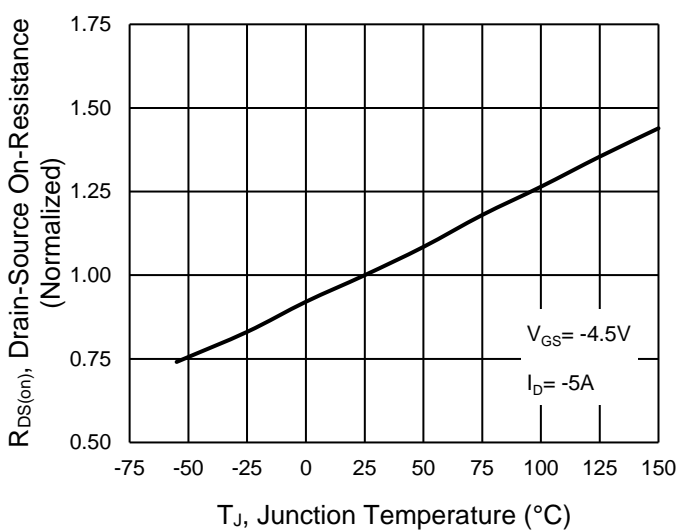
On-Resistance vs. Drain Current



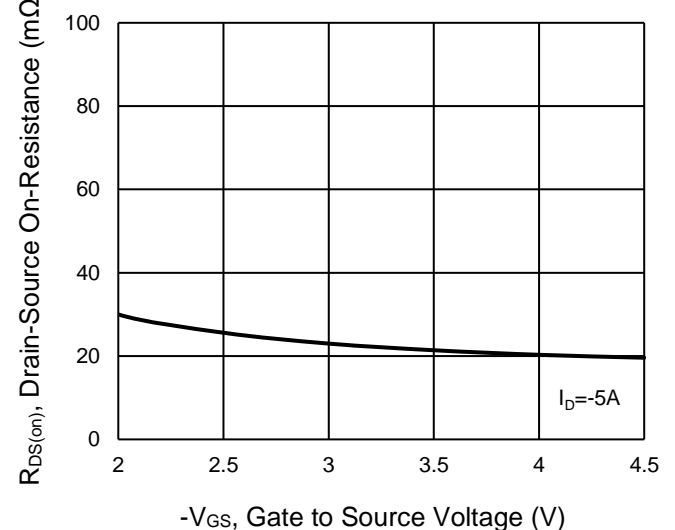
Gate-Source Voltage vs. Gate Charge



On-Resistance vs. Junction Temperature

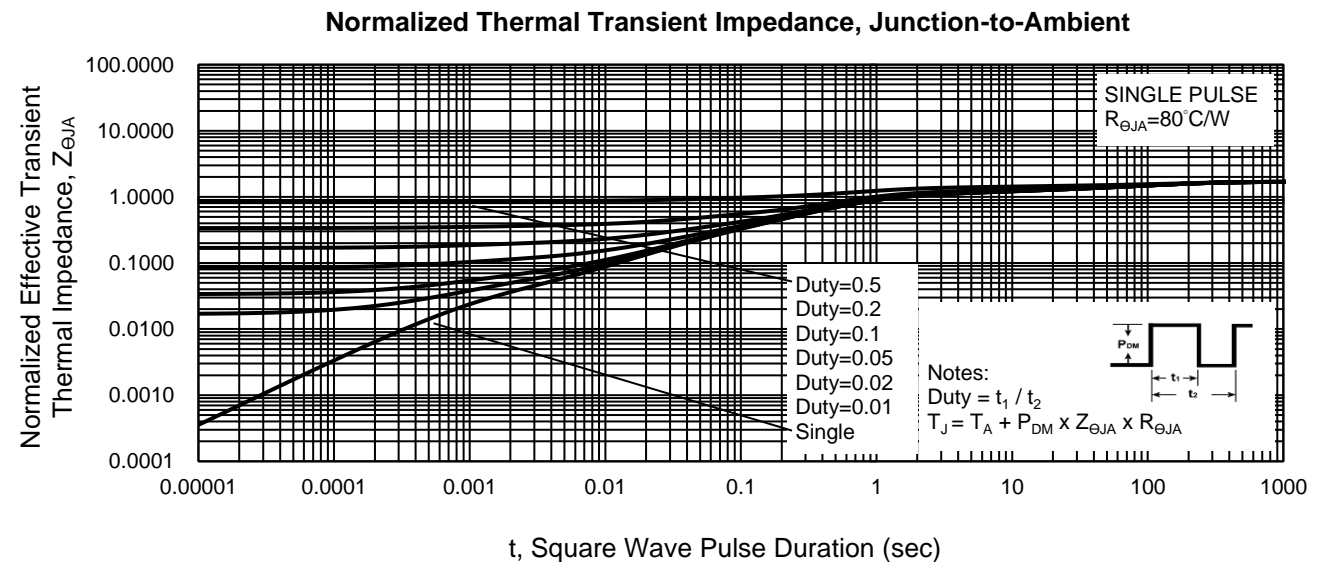
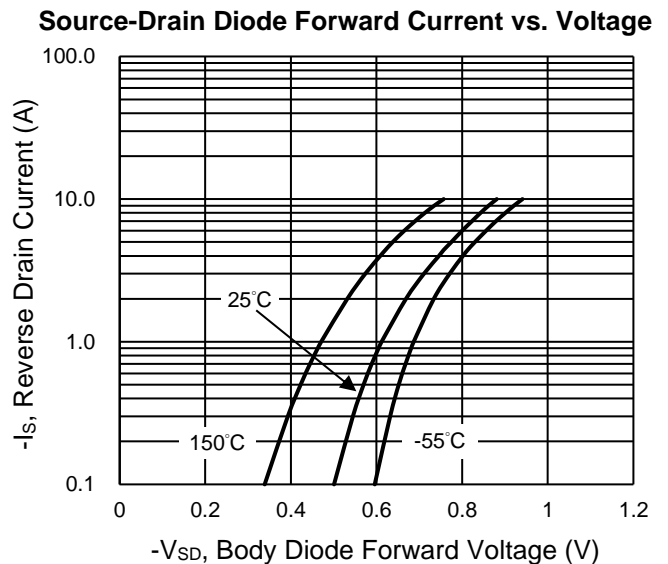
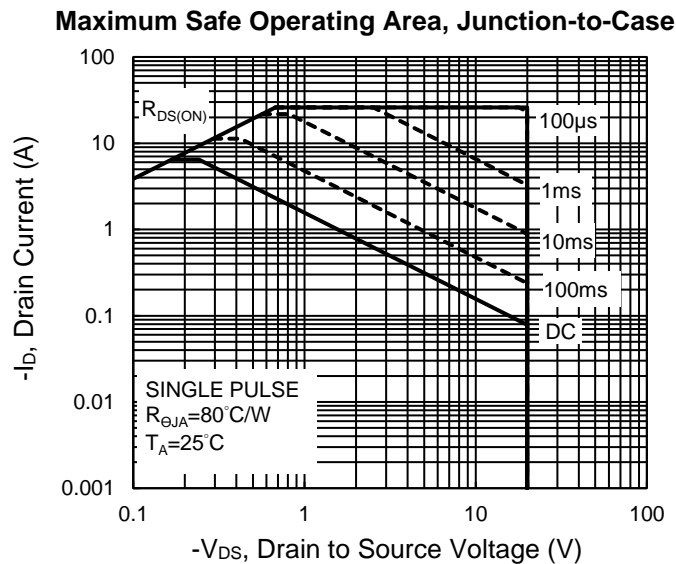
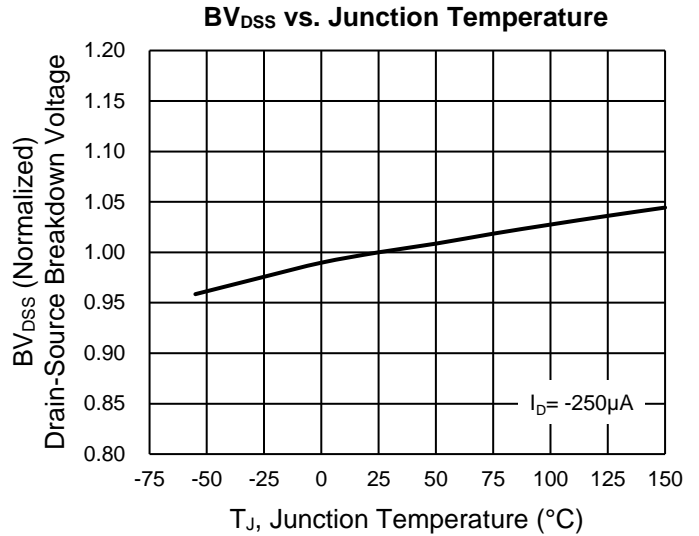
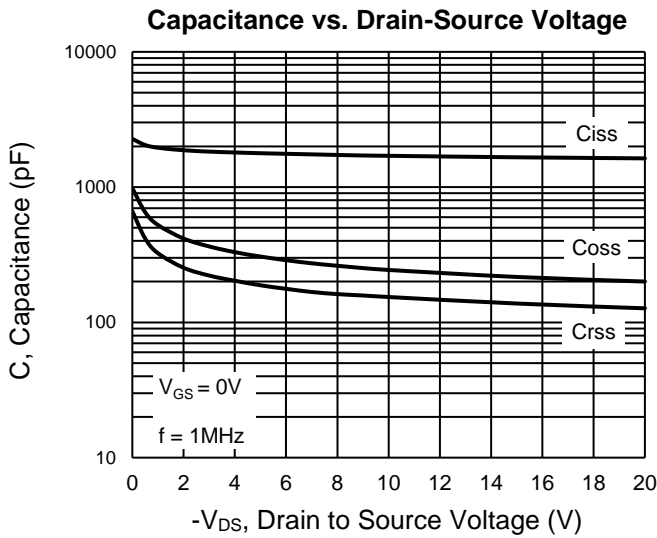


On-Resistance vs. Gate-Source Voltage



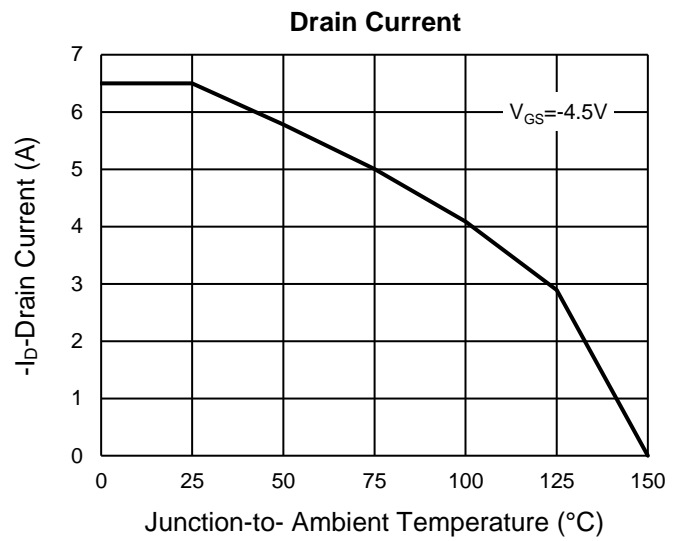
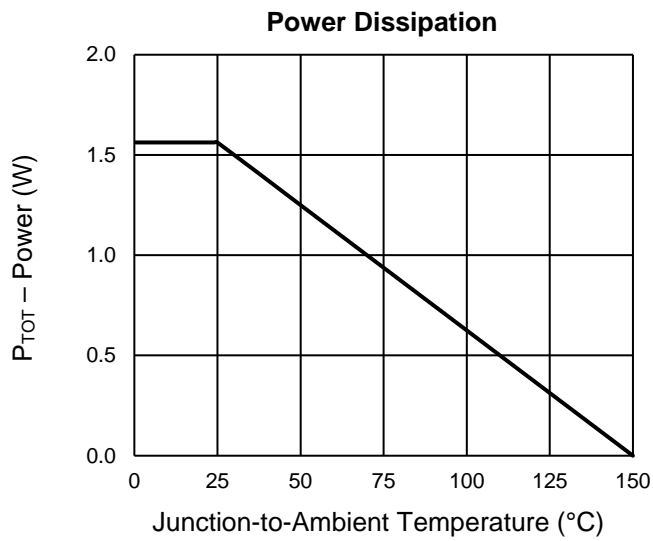
CHARACTERISTICS CURVES (P-Channel)

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

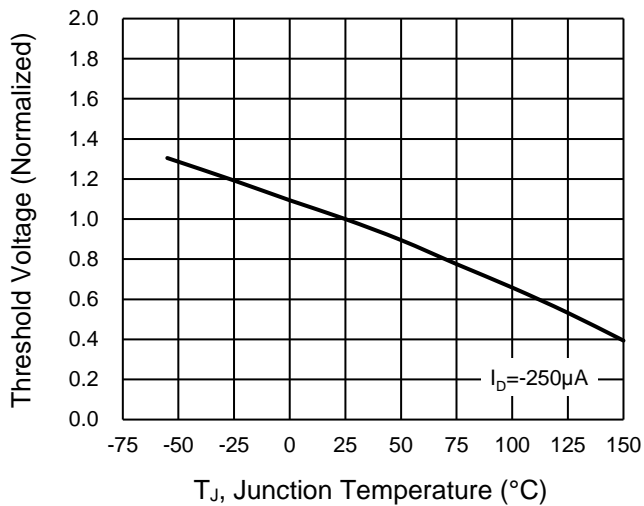


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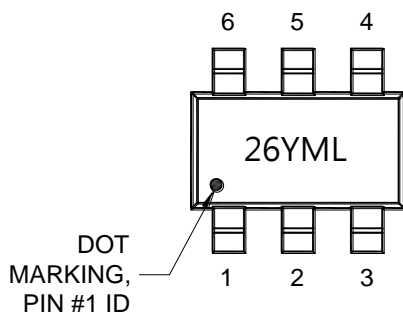
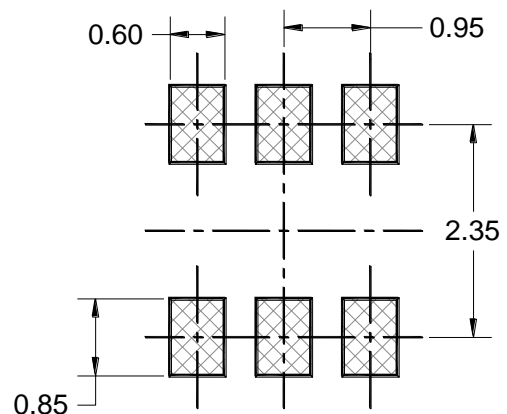
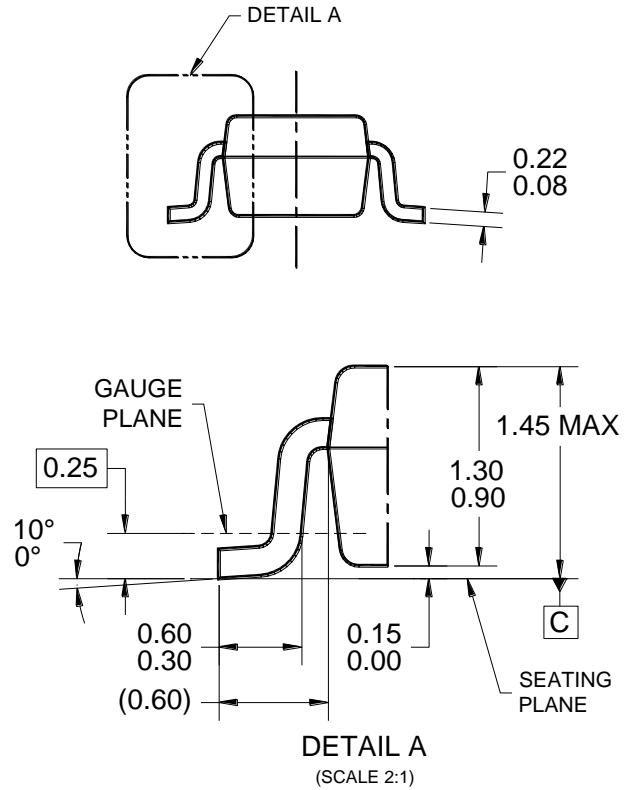
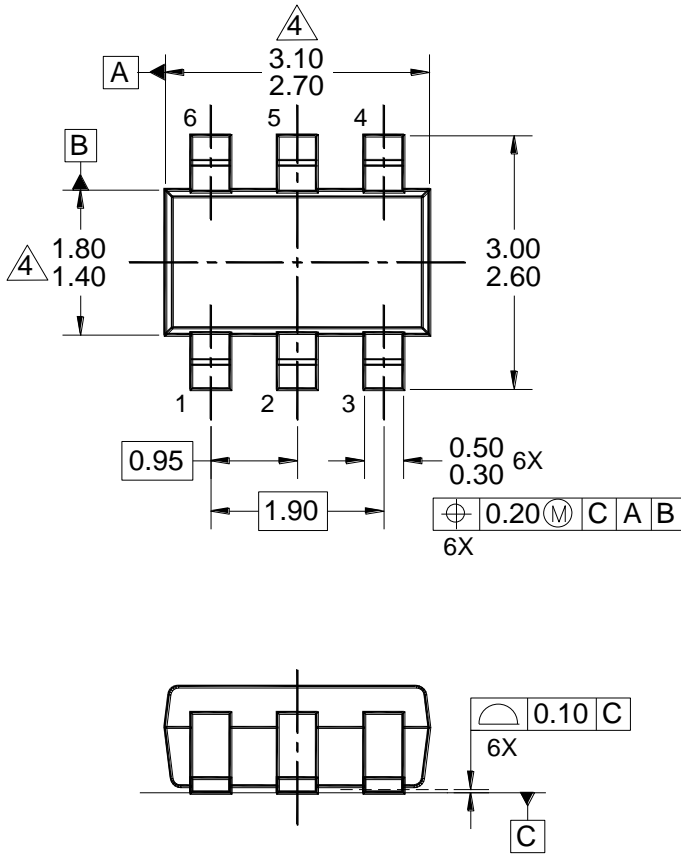


Normalized gate threshold voltage vs Temperature



PACKAGE OUTLINE DIMENSIONS (Unit: Millimeters)

SOT-26



- 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

NOTES: UNLESS OTHERWISE SPECIFIED

- ALL DIMENSIONS ARE IN MILLIMETERS.
- DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
- PACKAGE OUTLINE REFERENCE: JEDEC MO-178, VARIATION AB.
- MOLDED PLASTIC BODY DIMENSIONS DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.
- DWG NO. REF: HQ2SD07-SOT26-027 REV A.

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