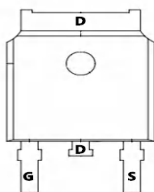
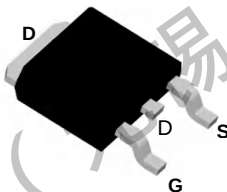
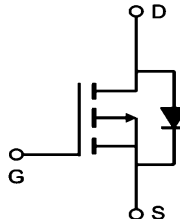


TM60P03D

P-Channel Enhancement Mosfet

General Description • Low $R_{DS(ON)}$ • RoHS and Halogen-Free Compliant Applications • Load switch • PWM	General Features $V_{DS} = -30V$ $I_D = -60A$ $R_{DS(ON)} = 8m\Omega (typ.) @ V_{GS} = -10V$ 100% UIS Tested 100% R_g Tested																																								
D:TO-252-3L  Marking: 60P03  																																									
Absolute Maximum Ratings $(T_C = 25^{\circ}C$ Unless Otherwise Noted) <table><tr><th>Symbol</th><th>Parameter</th><th>Rating</th><th>Units</th></tr><tr><td>V_{DS}</td><td>Drain-Source Voltage</td><td>-30</td><td>V</td></tr><tr><td>V_{GS}</td><td>Gate-Source Voltage</td><td>± 20</td><td>V</td></tr><tr><td>$I_D @ T_C = 25^{\circ}C$</td><td>Continuous Drain Current, $V_{GS} @ -10V$</td><td>-60</td><td>A</td></tr><tr><td>$I_D @ T_C = 100^{\circ}C$</td><td>Continuous Drain Current, $V_{GS} @ -10V$</td><td>-35</td><td>A</td></tr><tr><td>I_{DM}</td><td>Pulsed Drain Current</td><td>-185</td><td>A</td></tr><tr><td>EAS</td><td>Single Pulse Avalanche Energy</td><td>80</td><td>mJ</td></tr><tr><td>$P_D @ T_C = 25^{\circ}C$</td><td>Total Power Dissipation</td><td>43.1</td><td>W</td></tr><tr><td>T_{STG}</td><td>Storage Temperature Range</td><td>-55 to 175</td><td>$^{\circ}C$</td></tr><tr><td>T_J</td><td>Operating Junction Temperature Range</td><td>-55 to 175</td><td>$^{\circ}C$</td></tr></table>		Symbol	Parameter	Rating	Units	V_{DS}	Drain-Source Voltage	-30	V	V_{GS}	Gate-Source Voltage	± 20	V	$I_D @ T_C = 25^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V$	-60	A	$I_D @ T_C = 100^{\circ}C$	Continuous Drain Current, $V_{GS} @ -10V$	-35	A	I_{DM}	Pulsed Drain Current	-185	A	EAS	Single Pulse Avalanche Energy	80	mJ	$P_D @ T_C = 25^{\circ}C$	Total Power Dissipation	43.1	W	T_{STG}	Storage Temperature Range	-55 to 175	$^{\circ}C$	T_J	Operating Junction Temperature Range	-55 to 175	$^{\circ}C$
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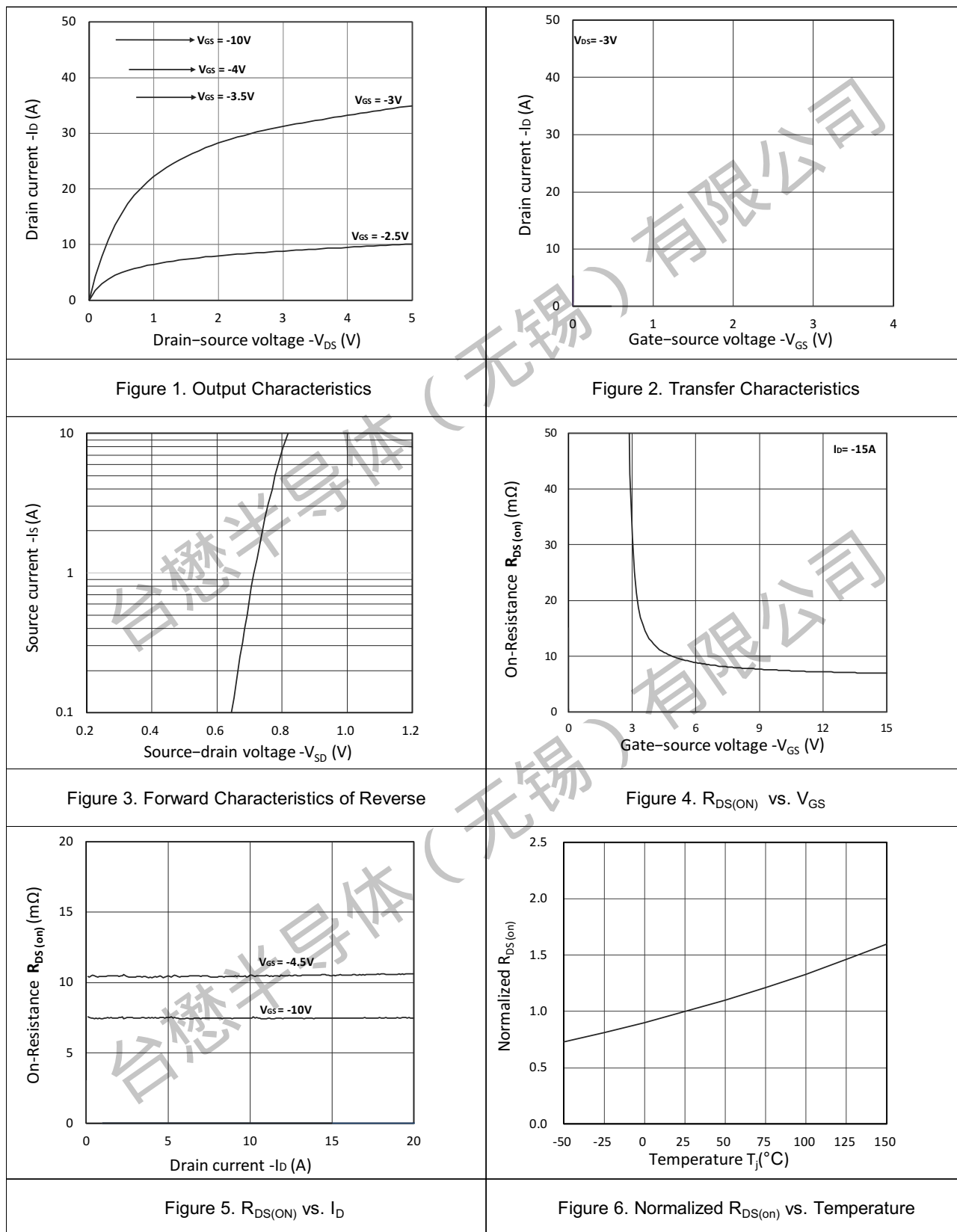
TM60P03D
P-Channel Enhancement Mosfet
Electrical Characteristics ($T_J = 25^\circ\text{C}$, unless otherwise noted)

Parameter		Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Static Characteristics							
Drain-Source Breakdown Voltage		$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30	-	-	V
Gate-body Leakage current		I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$	-	-	± 100	nA
Zero Gate Voltage Drain Current	$T_J=25^{\circ}C$	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$	-	-	-1	μA
	$T_J=100^{\circ}C$			-	-	-100	
Gate-Threshold Voltage		$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1	-1.5	-2.0	V
Drain-Source on-Resistance ⁴		$R_{DS(on)}$	$V_{GS} = -10V, I_D = -15A$	-	8	10	mΩ
			$V_{GS} = -4.5V, I_D = -10A$	-	11	19	
Forward Transconductance ⁴		g_{fs}	$V_{DS} = -10V, I_D = -15A$	-	44	-	S
Dynamic Characteristics ⁵							
Input Capacitance		C_{iss}	$V_{DS} = -15V, V_{GS} = 0V, f = 1MHz$	-	2203	-	pF
Output Capacitance		C_{oss}		-	315	-	
Reverse Transfer Capacitance		C_{rss}		-	279	-	
Gate Resistance		R_g	$f = 1MHz$	-	10.5	-	Ω
Switching Characteristics ⁵							
Total Gate Charge		Q_g	$V_{GS} = -10V, V_{DS} = -15V, I_D = -15A$	-	30	-	nC
Gate-Source Charge		Q_{gs}		-	5	-	
Gate-Drain Charge		Q_{gd}		-	7.5	-	
Turn-on Delay Time		$t_{d(on)}$	$V_{GS} = -10V, V_{DD} = -15V, R_G = 2.5\Omega, I_D = -15A$	-	14.1	-	ns
Rise Time		t_r		-	20	-	
Turn-off Delay Time		$t_{d(off)}$		-	94	-	
Fall Time		t_f		-	65	-	
Drain-Source Body Diode Characteristics							
Diode Forward Voltage ⁴		V_{SD}	$I_S = -1A, V_{GS} = 0V$	-	-	-1.2	V
Continuous Source Current	$T_C=25^{\circ}C$	I_S	-	-	-	-60	A

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P-Channel Enhancement Mosfet

Typical Characteristics



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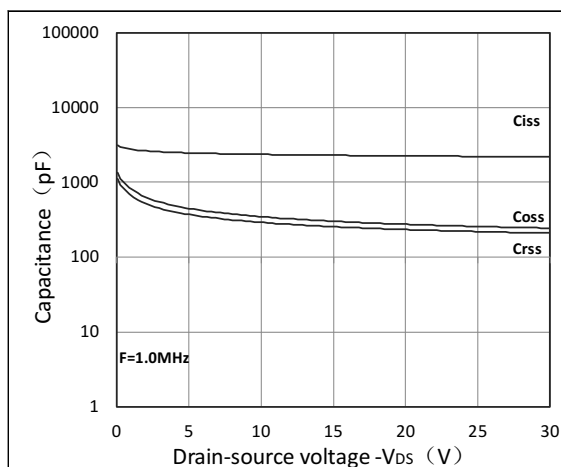


Figure 7. Capacitance Characteristics

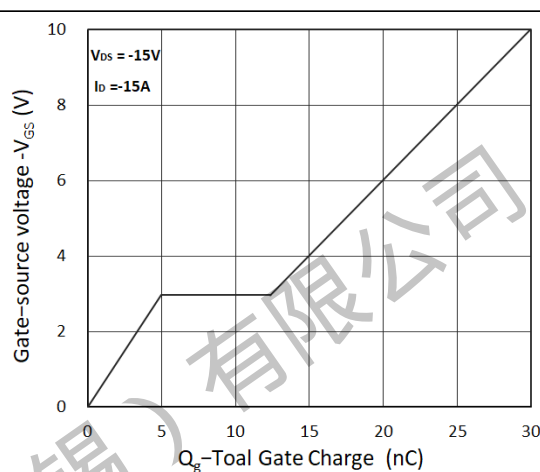


Figure 8. Gate Charge Characteristics

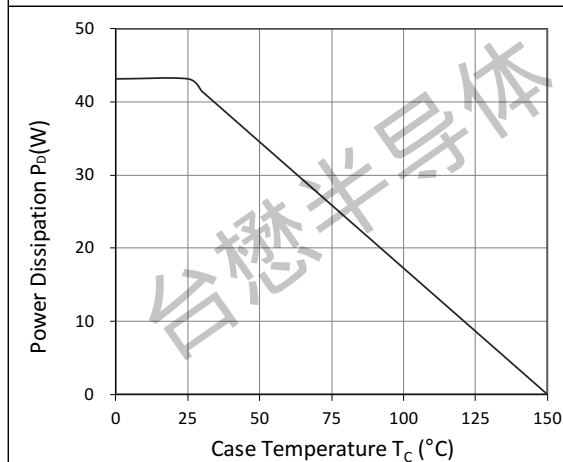


Figure 9. Power Dissipation

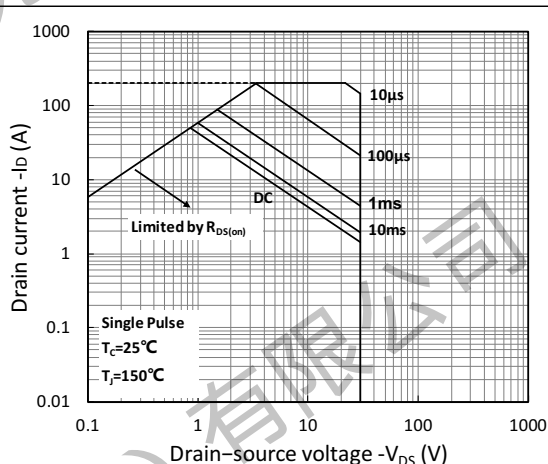


Figure 10. Safe Operating Area

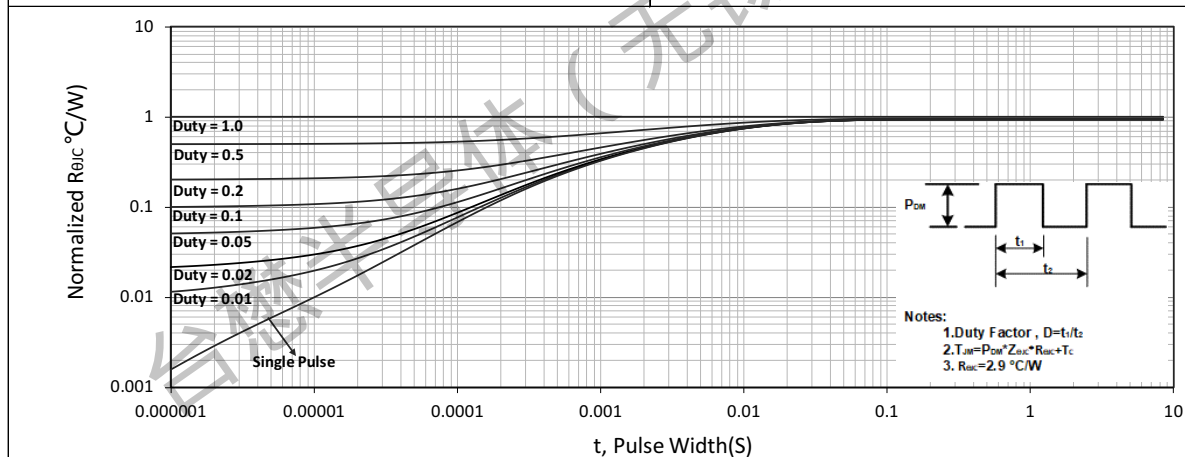


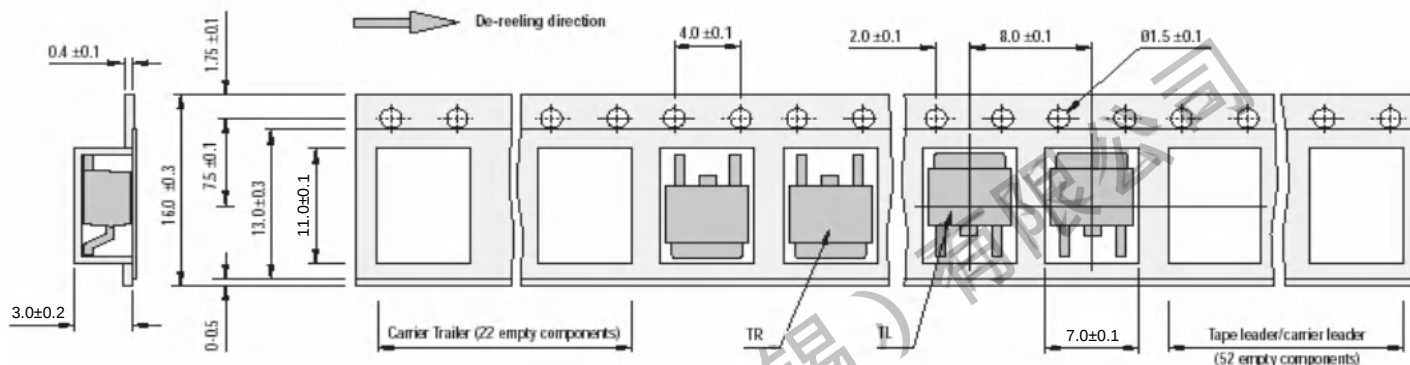
Figure 11. Normalized Maximum Transient Thermal Impedance



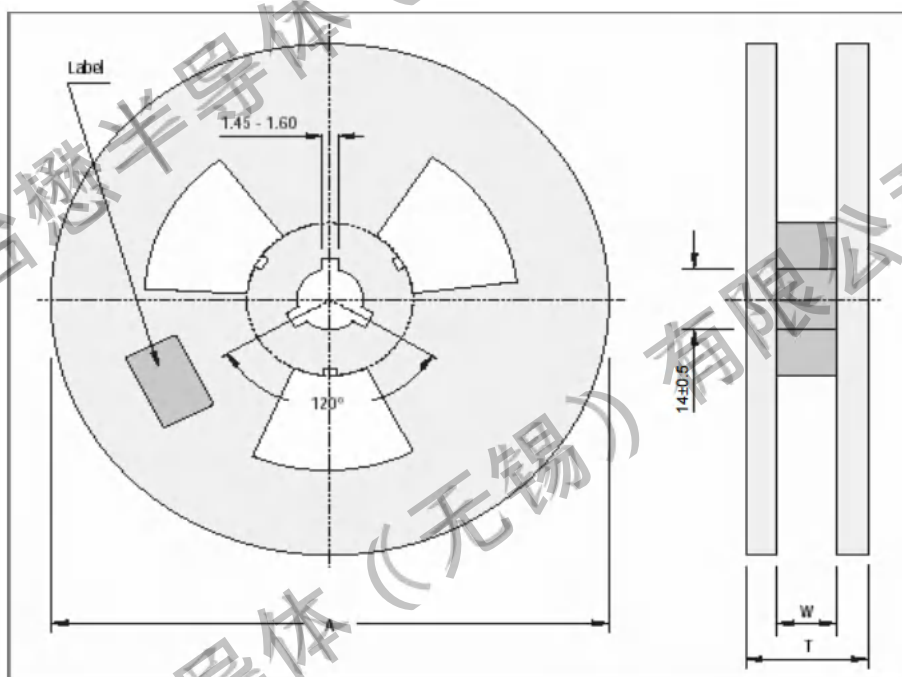
TM60P03D

P-Channel Enhancement Mosfet

TO-252-3L Embossed Carrier Tape



TO-252-3L Reel



All Dimensions are in mm.

Reel Specifications				
Package	Tape Width	Reel Dia. A - Max	Inside Thickness W	Reel Thickness T - max
TO-252-3L	16	330	18.0 ± 1.5	20

Packaging Information

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
2,500 pcs	13 inch	5,000 pcs	355×370×50	25,000 pcs	380×275×380	

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Revision history:

Date	Rev	Description	Page
2023.04.09	23.04	Original	