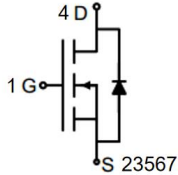
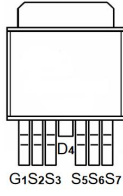
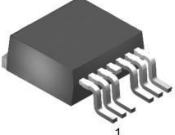


## P-Channel Enhancement Mode Power MOSFET

<p><b>Description</b></p> <p>The GT065P06M6 uses advanced trench technology to provide excellent <math>R_{DS(ON)}</math>, low gate charge. It can be used in a wide variety of applications.</p> <p><b>General Features</b></p> <ul style="list-style-type: none"> <li>● <math>V_{DS}</math> -60V</li> <li>● <math>I_D</math> (at <math>V_{GS} = -10V</math>) -103A</li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = -10V</math>) &lt; 7.5m<math>\Omega</math></li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = -4.5V</math>) &lt; 9.5m<math>\Omega</math></li> <li>● 100% Avalanche Tested</li> <li>● RoHS Compliant</li> </ul> <p><b>Application</b></p> <ul style="list-style-type: none"> <li>● Power switch</li> <li>● DC/DC converters</li> </ul>	 <p>Schematic diagram</p>  <p>pin assignment</p>  <p>TO-263-6</p>
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### Ordering Information

Device	Package	Marking	Packaging
GT065P06M6	TO-263-6	GT065P06	800psc/Reel

### Absolute Maximum Ratings $T_C = 25^\circ\text{C}$ , unless otherwise noted

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	-60	V
Continuous Drain Current	$I_D$	$T_C = 25^\circ\text{C}$	-103
		$T_C = 100^\circ\text{C}$	-65
Pulsed Drain Current (note1)	$I_{DM}$	-412	A
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Power Dissipation	$P_D$	178	W
Single pulse avalanche energy (note2)	$E_{AS}$	272	mJ
Operating Junction and Storage Temperature Range	$T_J, T_{stg}$	-55 To 150	$^\circ\text{C}$

### Thermal Resistance

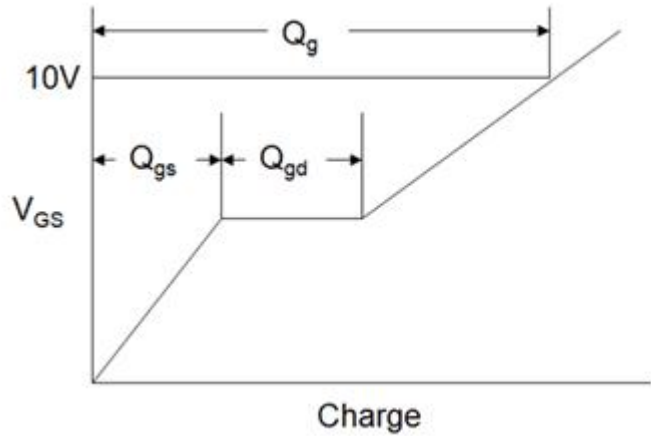
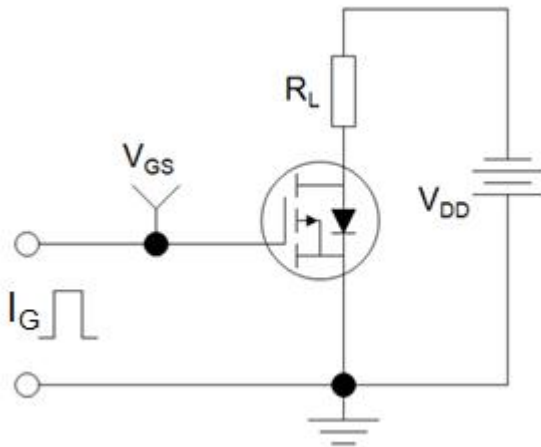
Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-Ambient	$R_{thJA}$	50	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{thJC}$	0.7	$^\circ\text{C/W}$

Specifications $T_J = 25^\circ\text{C}$ , unless otherwise noted						
Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
<b>Static Parameters</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-60	--	--	V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -60V, V_{GS} = 0V$	--	--	-1	$\mu A$
Gate-Source Leakage	$I_{GSS}$	$V_{GS} = \pm 20V$	--	--	$\pm 100$	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.0	-1.7	-2.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = -10V, I_D = -20A$	--	6.0	7.5	m $\Omega$
		$V_{GS} = -4.5V, I_D = -15A$	--	7.7	9.5	
Forward Transconductance	$g_{FS}$	$V_{DS} = -5V, I_D = -20A$	--	51	--	S
<b>Dynamic Parameters</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V,$ $V_{DS} = -30V,$ $f = 1.0\text{MHz}$	--	5985	--	pF
Output Capacitance	$C_{oss}$		--	907	--	
Reverse Transfer Capacitance	$C_{rss}$		--	42	--	
Total Gate Charge	$Q_g$	$V_{DD} = -30V,$ $I_D = -20A,$ $V_{GS} = -10V$	--	99	--	nC
Gate-Source Charge	$Q_{gs}$		--	13	--	
Gate-Drain Charge	$Q_{gd}$		--	21	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = -30V,$ $I_D = -20A,$ $R_G = 3\Omega$	--	20	--	ns
Turn-on Rise Time	$t_r$		--	18	--	
Turn-off Delay Time	$t_{d(off)}$		--	55	--	
Turn-off Fall Time	$t_f$		--	35	--	
<b>Drain-Source Body Diode Characteristics</b>						
Continuous Body Diode Current	$I_S$	$T_C = 25^\circ\text{C}$	--	--	-103	A
Body Diode Voltage	$V_{SD}$	$T_J = 25^\circ\text{C}, I_{SD} = -20A, V_{GS} = 0V$	--	--	-1.2	V
Reverse Recovery Charge	$Q_{rr}$	$I_F = -20A, V_{GS} = 0V$ $di/dt = -100A/\mu s$	--	71	--	nC
Reverse Recovery Time	$T_{rr}$		--	49	--	ns

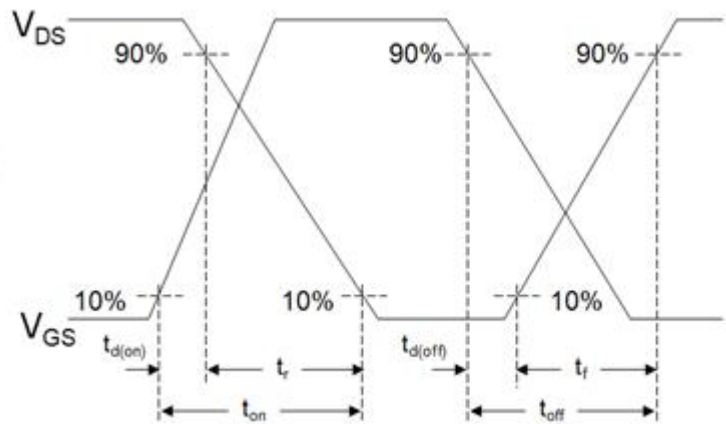
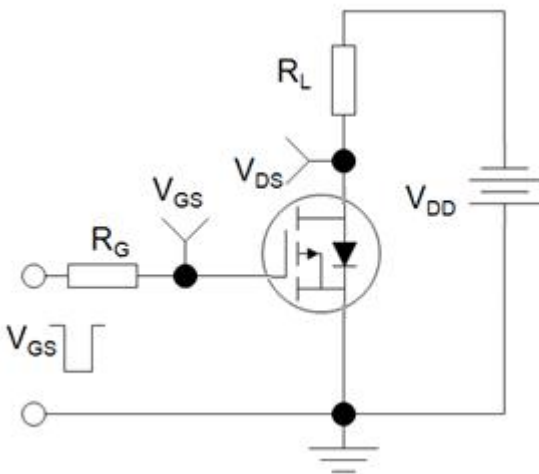
### Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. EAS condition :  $T_J = 25^\circ\text{C}, V_{DD} = -50V, V_{GS} = -10V, L = 0.5\text{mH}, R_g = 25\Omega$   
The table shows the minimum avalanche energy, which is 702mJ when the device is tested until failure
3. Identical low side and high side switch with identical  $R_G$

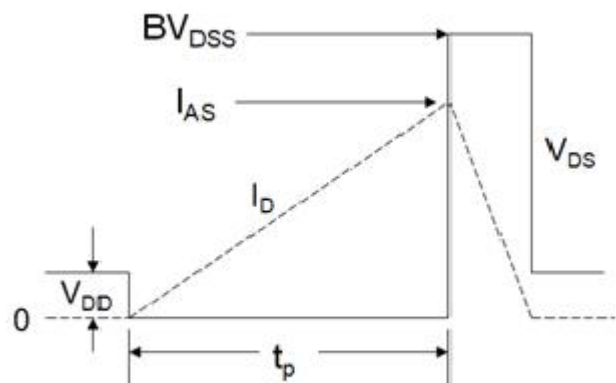
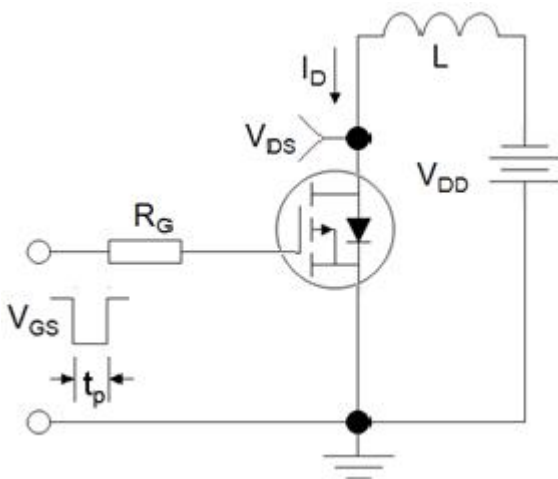
### Gate Charge Test Circuit



### Switch Time Test Circuit

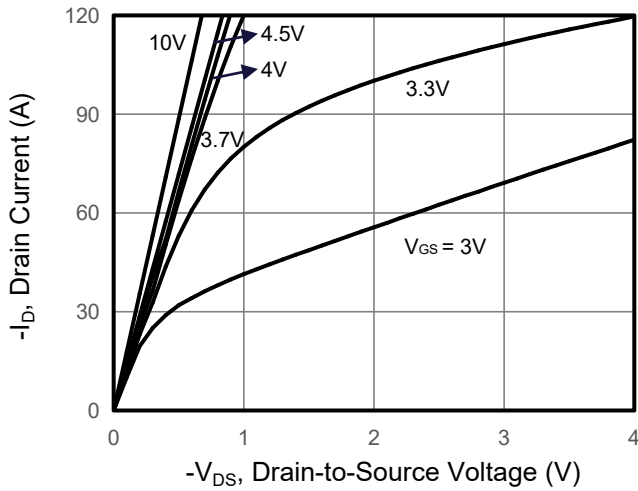


### EAS Test Circuit

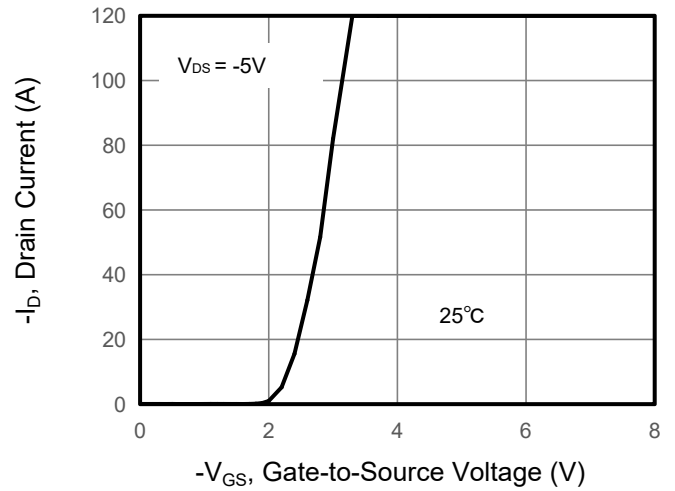


Typical Characteristics  $T_J = 25^\circ\text{C}$ , unless otherwise noted

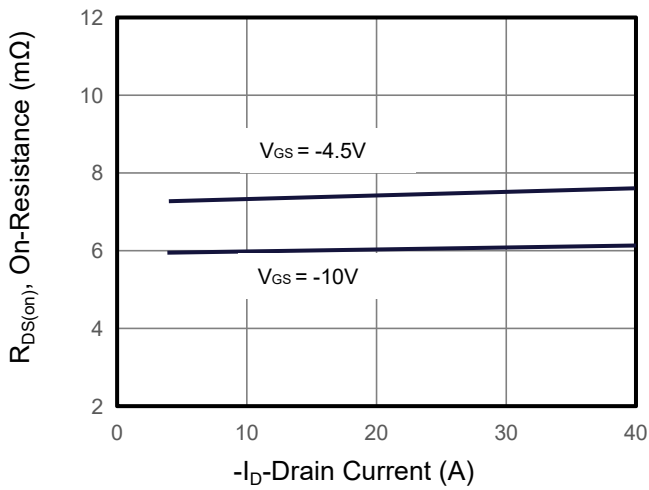
**Figure 1. Output Characteristics**



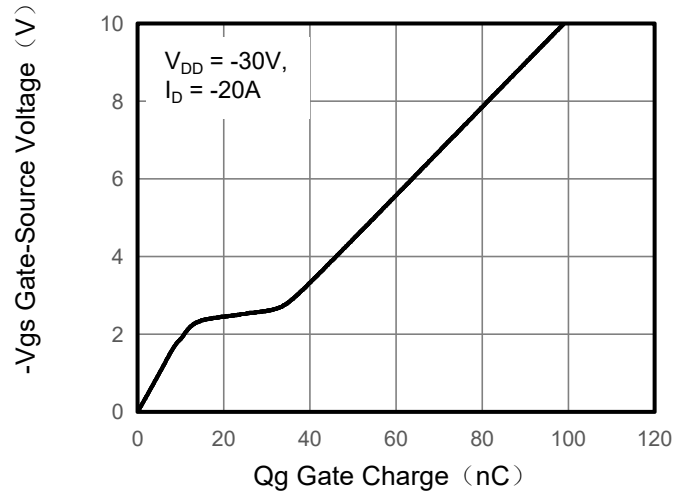
**Figure 2. Transfer Characteristics**



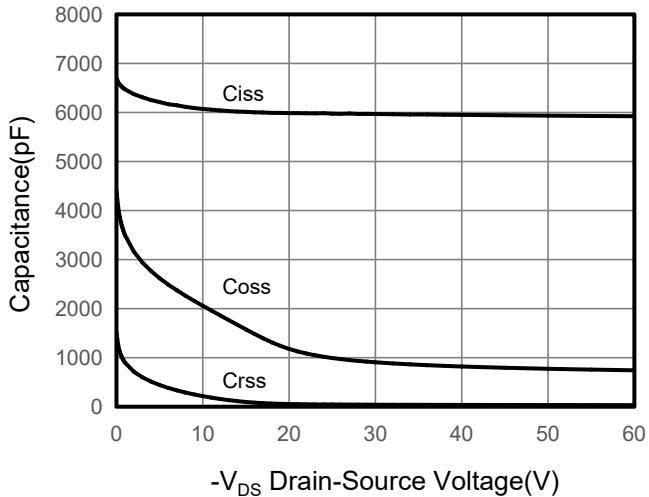
**Figure 3. Drain Source On Resistance**



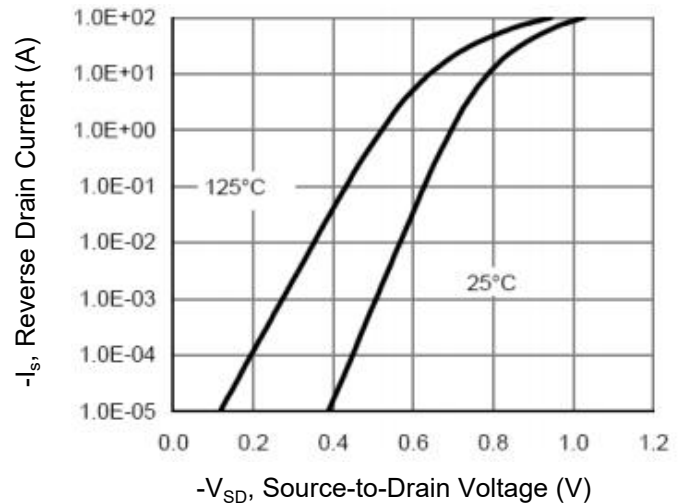
**Figure 4. Gate Charge**



**Figure 5. Capacitance**



**Figure 6. Source-Drain Diode Forward**



Typical Characteristics  $T_J = 25^\circ\text{C}$ , unless otherwise noted

Figure 7. Drain-Source On-Resistance

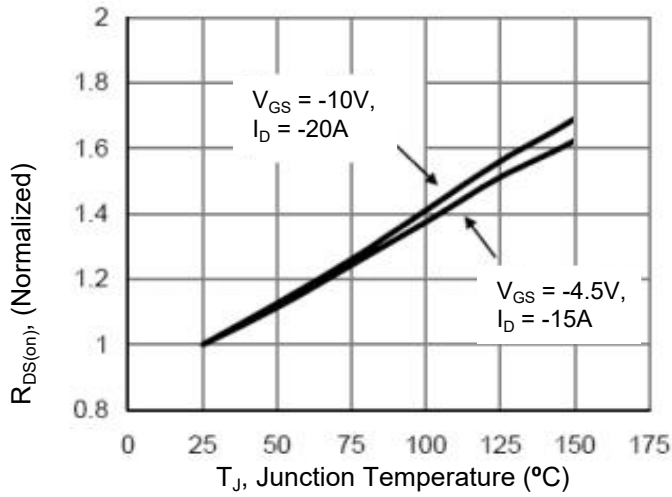


Figure 8. Safe Operation Area

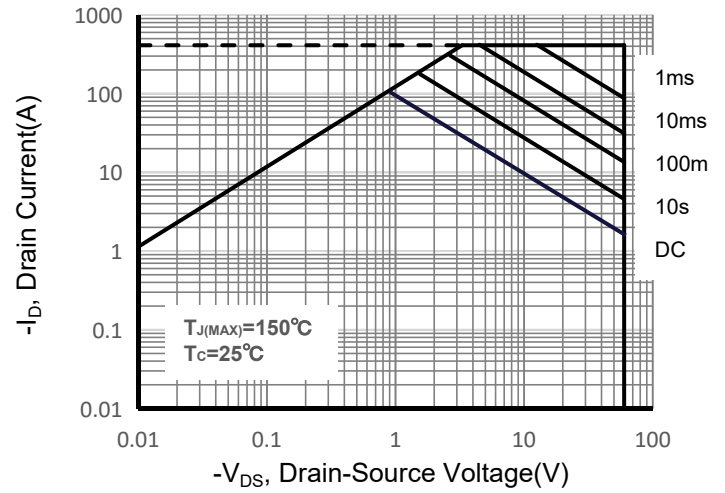


Figure 9. Maximum Continuous Drain Current vs Case Temperature

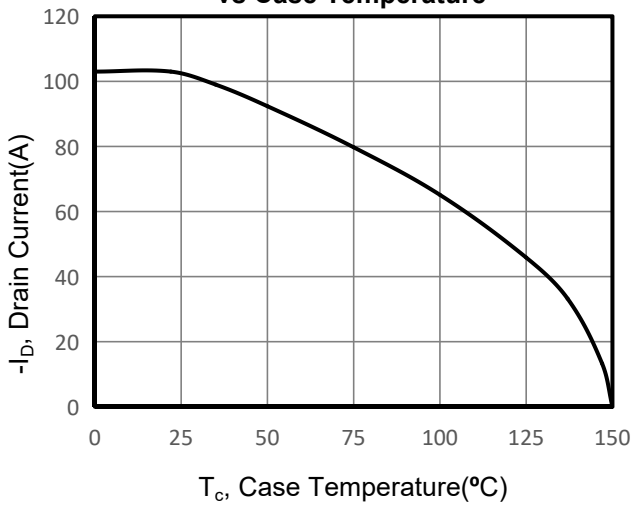
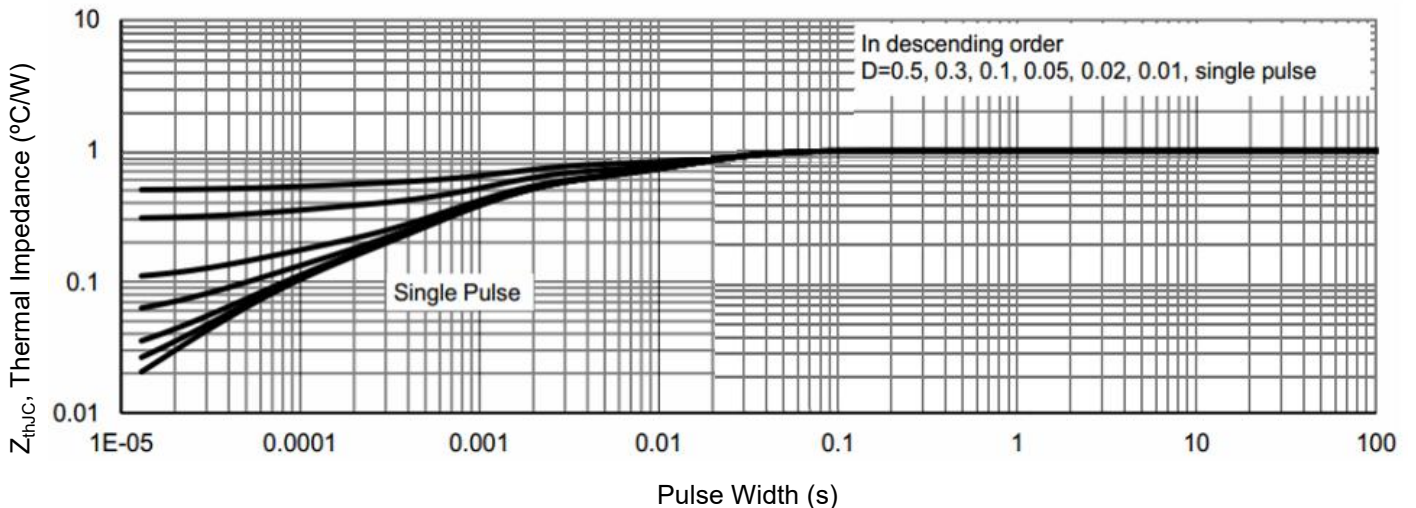
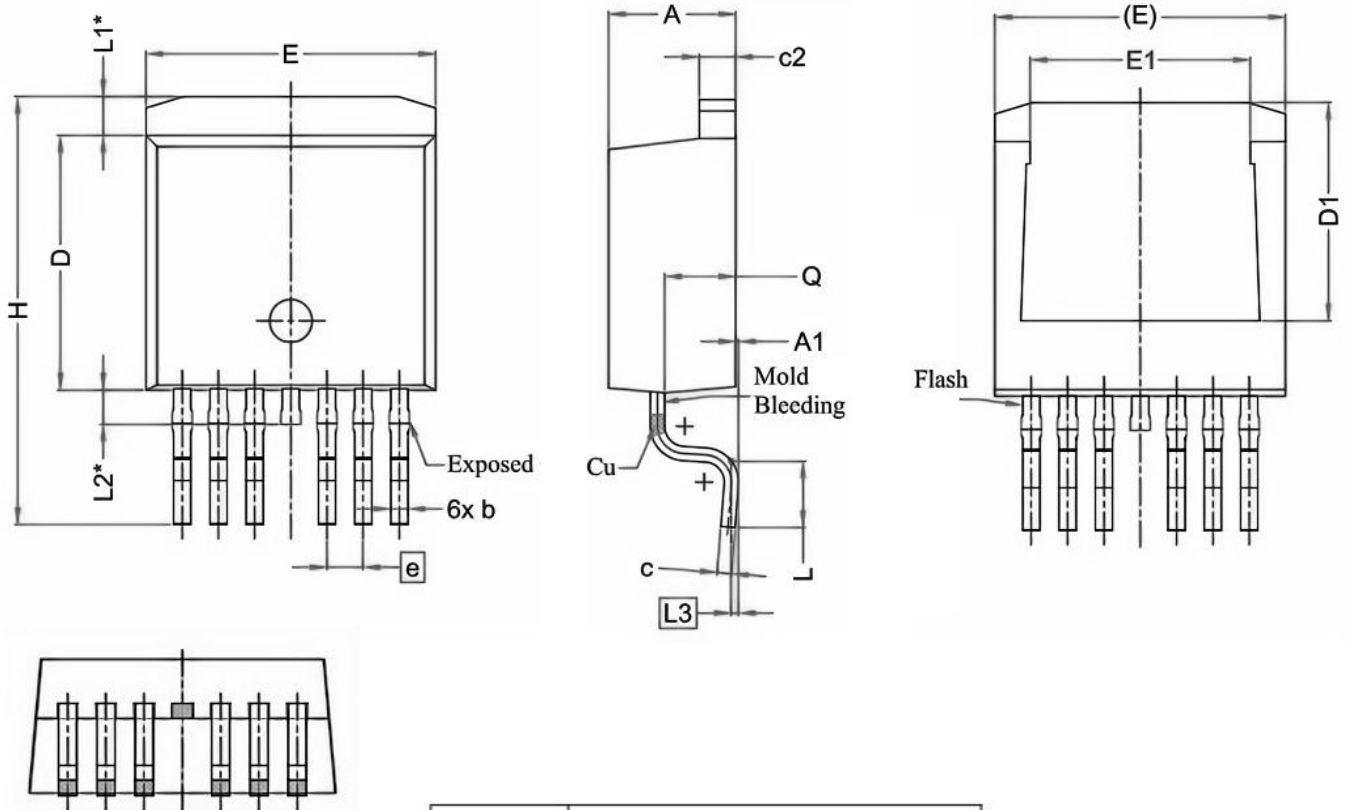


Figure 10. Normalized Maximum Transient Thermal Impedance



## TO-263-6 Package Information



SYMBOL	DIMENSIONS		
	MIN.	NOM.	MAX.
A	4.24	4.44	4.64
A1	0.00	0.10	0.25
b	0.50	0.60	0.70
c	0.40	0.50	0.60
c2	1.15	1.27	1.40
D	8.82	8.92	9.02
D1	6.86	7.65	---
E	9.96	10.16	10.36
E1	6.89	7.77	7.89
e	1.27 BSC		
H	14.61	15.00	15.88
L	1.78	2.32	2.79
L1	1.36 REF.		
L2	1.20 REF.		
L3	0.25 BSC		
Q	2.30	2.48	2.70