

Description

MOSFET Product Summary

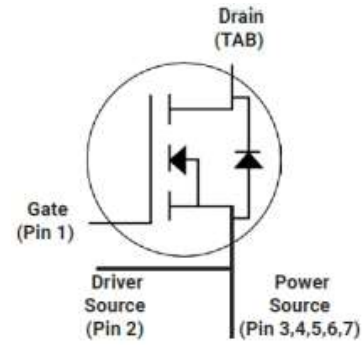
$V_{DS}(V)$	$R_{DS(on)}(m\Omega)$	$I_D(A)$
1700	750@ $V_{GS} = 12V$	5

Feature

- High Speed Switching with Low Capacitances
- Lower QG and Device Capacitances(C_{oss}, C_{rss})
- Body Diode with Low VF and Low QRR
- Faster and More Efficient Switching
- ROHS Compliant, Halogen free

Applications

- Solar String Inverter and Central Inverter
- UPS
- Switch Mode Power Supplies
- Power Factor Correction Modules
- Battery Charging
- Auxiliary Power Supply
- High Voltage Converter



Schematic diagram



TO-263-7

Absolute maximum rating@25°C

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	1700	V
Gate-Source Voltage	V_{GS}	-5/+15	V
Continuous Drain Current @ $V_{GS}=15V$	I_D	$T_C=25^\circ C$	5
		$T_C=100^\circ C$	3
Pulsed Drain Current	I_{DM}	10	A
Power Dissipation	P_D	60	W
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +175	°C

Thermal Resistance

Parameter	Symbol	Min	Typ	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	-	-	2.5	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	-	-	40	°C/W

Electrical characteristics per line@25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Statistic Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS} = 0V, I_D = 100\mu A$	1700	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 1700V, V_{GS} = 0V$	-	-	100	μA
Gate-Body Leakage Current	I_{GSS}	$V_{GS} = -5V \text{ to } 15V, V_{DS} = 0V$	-	-	100	nA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1mA$	1.5	2	3	V
Recommended turn-on Voltage	V_{GSon}	Static	-	12	-	V
Recommended turn-off Voltage	V_{GSoff}		-	-3	-	
Drain-Source On-State Resistance	$R_{DS(on)}$	$V_{GS} = 12V, I_D = 2A$	-	750	1000	m Ω
		$V_{GS} = 12V, I_D = 2A$ $T_J = 175^\circ C$	-	1350	-	
Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{DS} = 1000V, V_{AC} = 25 \text{ mV},$ $f = 1MHz$	-	200	-	pF
Output Capacitance	C_{oss}		-	6	-	
Reverse Transfer Capacitance	C_{rss}		-	1	-	
Transconductance	g_{fs}	$V_{DS} = 10V, I_D = 2A$	-	1	-	S
C_{OSS} Stored Energy	E_{OSS}	$V_{DS} = 1000V, f = 1MHz$	-	3	-	μJ
Turn-On Switching Energy	E_{on}	$V_{DS} = 1200V, I_D = 2A$ $V_{GS} = -3/+12V,$ $L = 1mH, T_J = 175^\circ C$	-	27	-	μJ
Turn-Off Switching Energy	E_{off}		-	8.4	-	
Turn-on Delay Time	$t_{d(on)}$	$V_{DS} = 1200V, I_D = 2A$ $V_{GS} = -3/+12V,$ $R_{ext} = 25\Omega, L = 1mH$	-	11	-	ns
Turn-on Rise Time	t_r		-	7	-	
Turn-Off Delay Time	$t_{d(off)}$		-	9	-	
Turn-Off Fall Time	t_f		-	6	-	
Total Gate Charge	Q_g	$V_{DS} = 1200V, I_D = 2A,$ $V_{GS} = -3/+12V$	-	8	-	nC
Gate-Source Charge	Q_{gs}		-	1.5	-	
Gate-Drain Charge	Q_{gd}		-	3	-	
Reverse Diode Characteristics						
Forward Voltage	V_{FSD}	$V_{GS} = 0V, I_F = 1A, T_J = 25^\circ C$	-	3.5	6.0	V
		$V_{GS} = 0V, I_F = 1A, T_J = 175^\circ C$	-	3.0	6.0	
Continuous Diode Forward Current	I_s	$V_{GS} = 0V$	-	5	-	A

Typical Characteristics

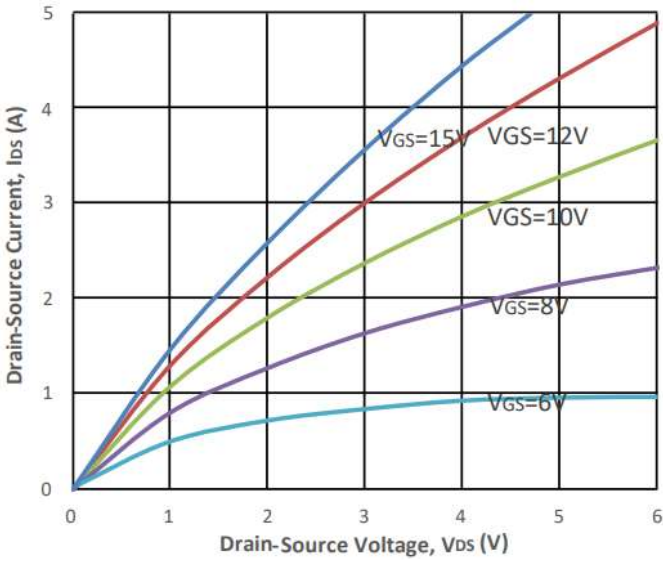


Fig1. Output characteristics ($T_J = 25\text{ }^\circ\text{C}$)

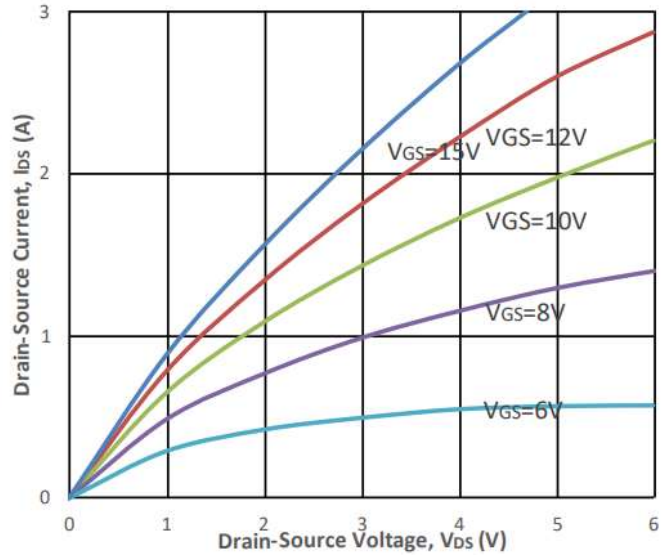


Fig2. Output characteristics ($T_J = 175\text{ }^\circ\text{C}$)

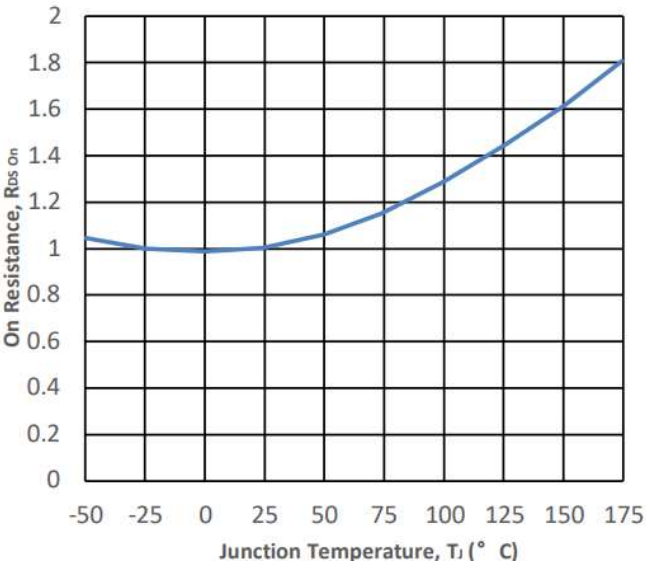


Fig3. Normalized On-Resistance vs. Temperature

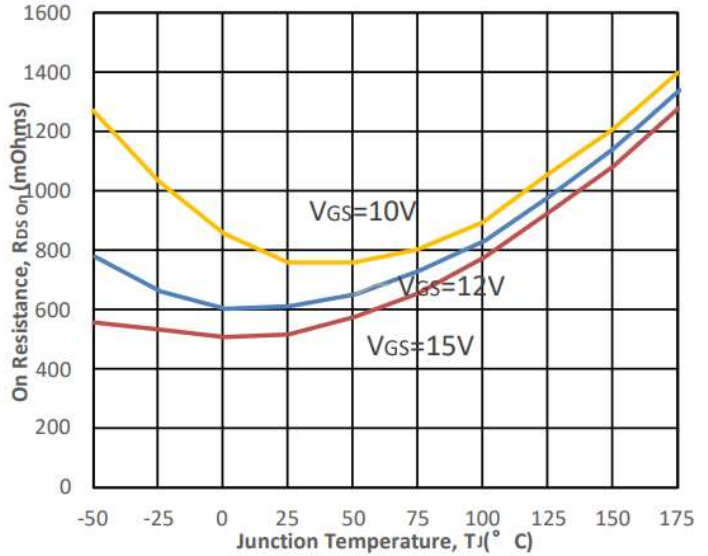


Fig4. On-Resistance vs. Temperature

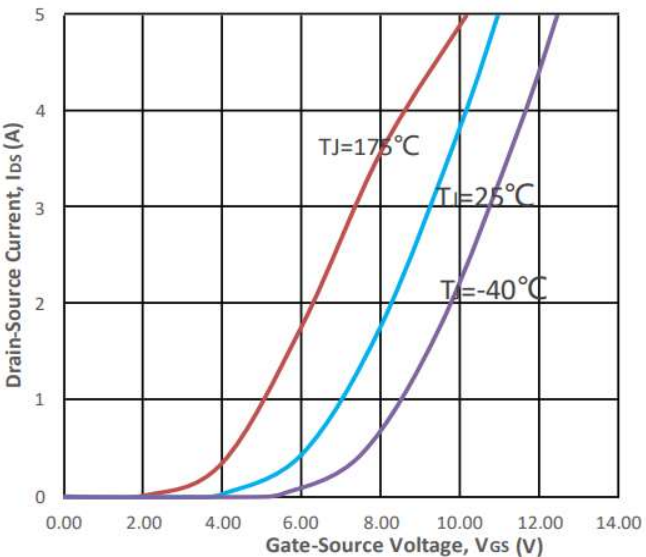


Fig5. Transfer Characteristic

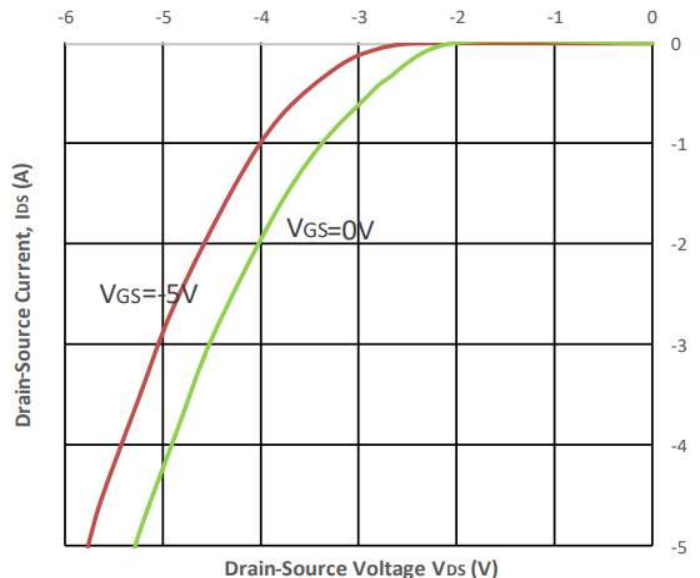


Fig6. Body Diode Characteristic at $25\text{ }^\circ\text{C}$

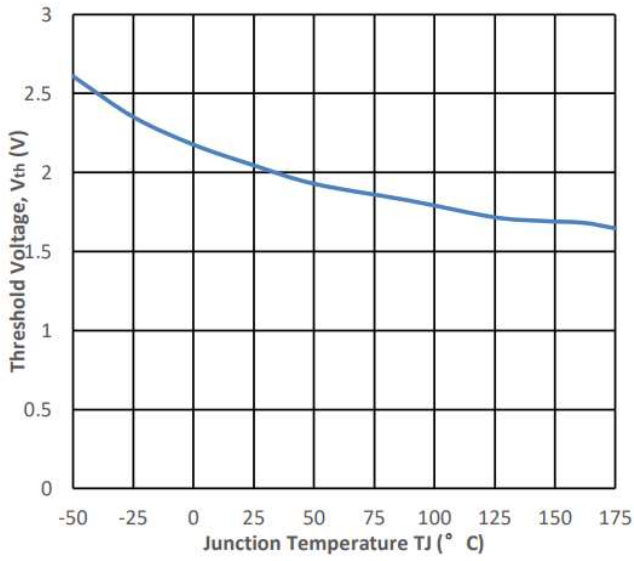


Fig7. Threshold Voltage vs. Temperature

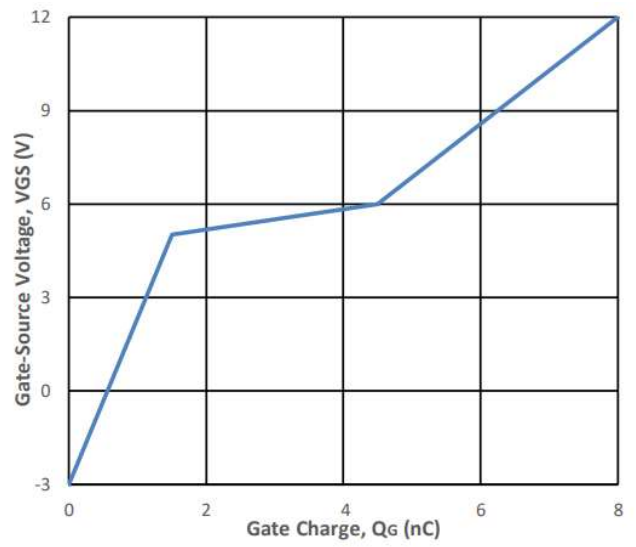


Fig8. Gate Charge Characteristics

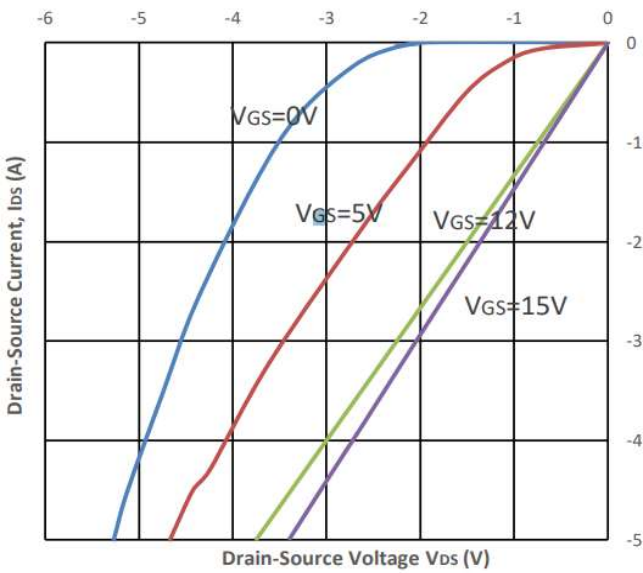


Fig9. 3rd Quadrant Characteristic at 25 °C

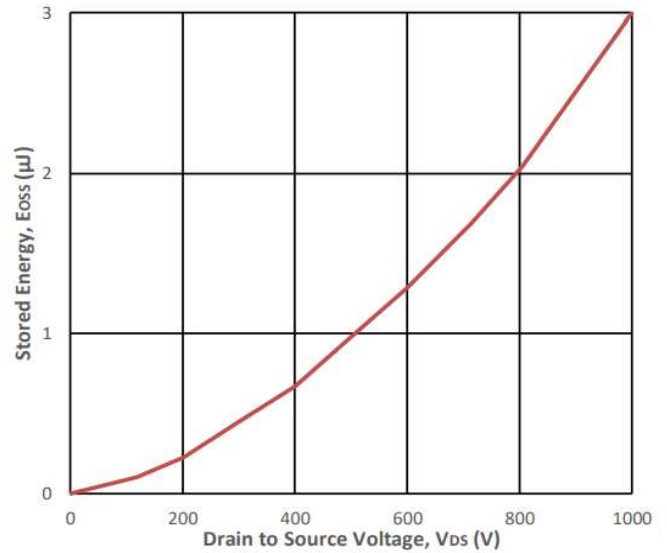


Fig10. Output Capacitor Stored Energy

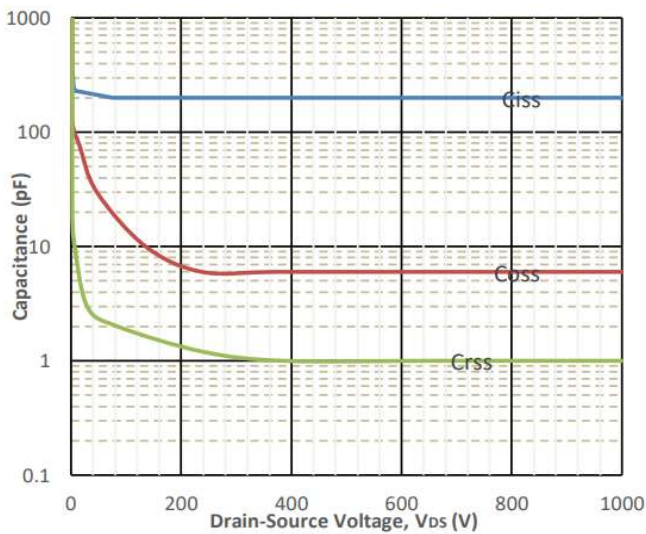


Fig11. Capacitances vs. Drain-Source

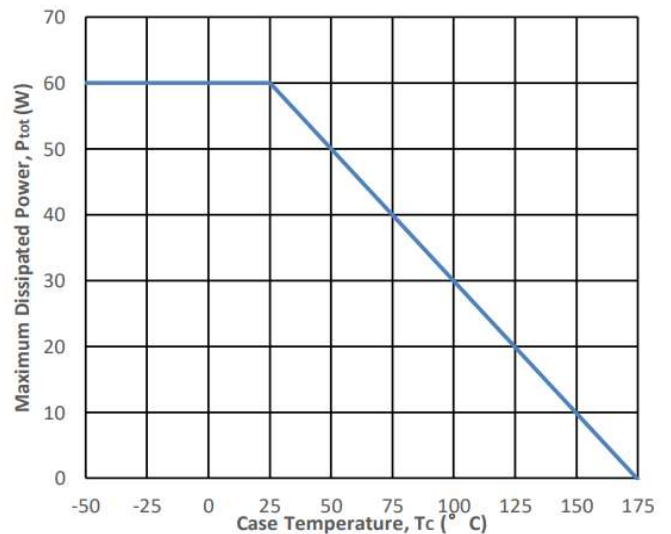


Fig12. Max Power Dissipation Derating Vs Tc

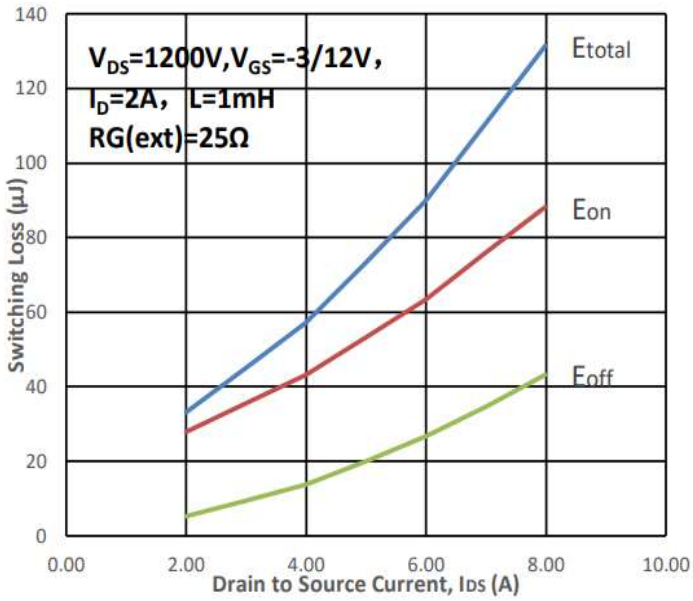


Fig13. Switching Energy vs. Drain Current

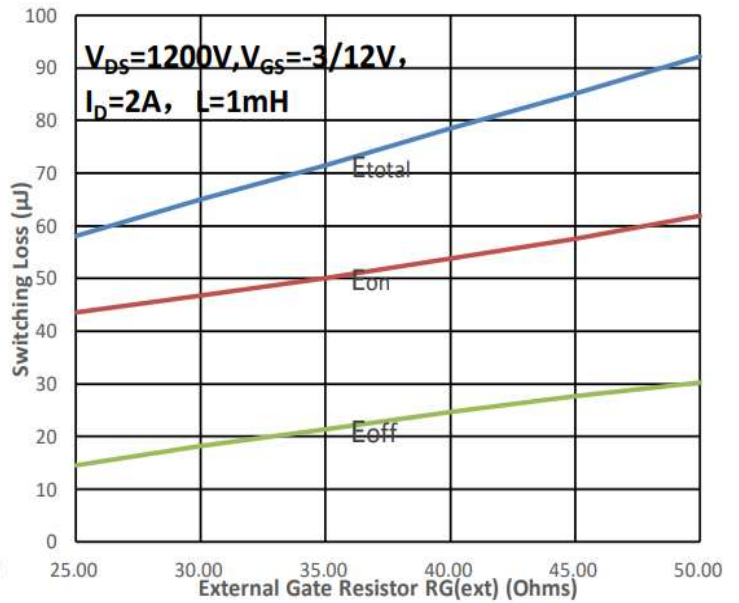


Fig14. Switching Energy vs. $R_G(ext)$

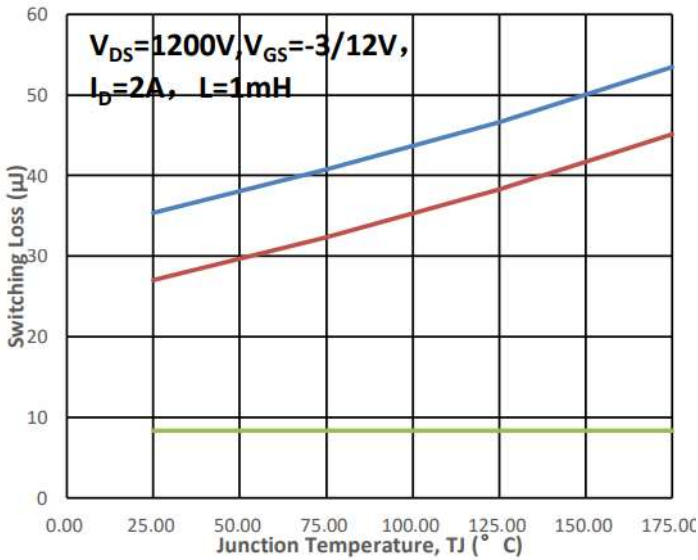


Fig15. Switching Energy vs. Temperature

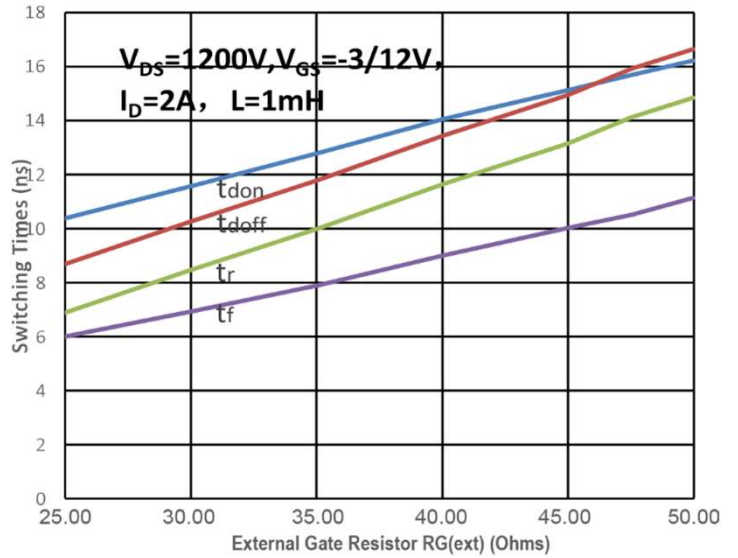


Fig16. Switching Times vs. $R_G(ext)$

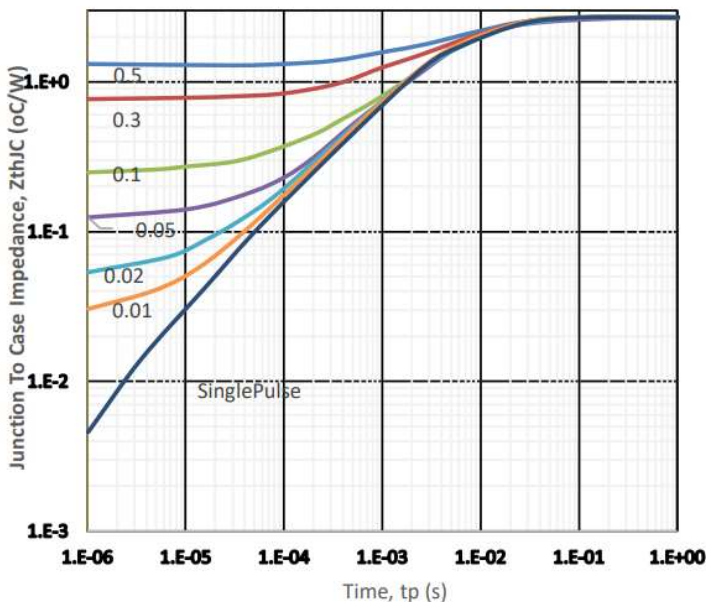


Fig17. Transient Thermal Impedance

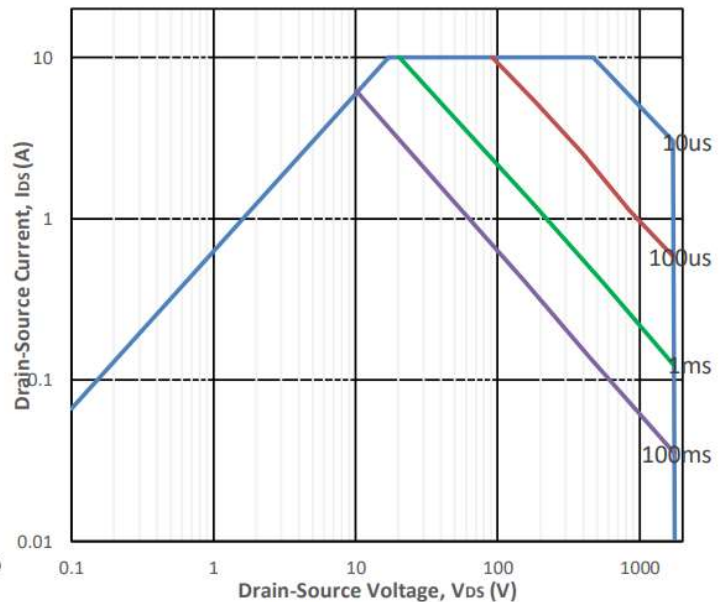
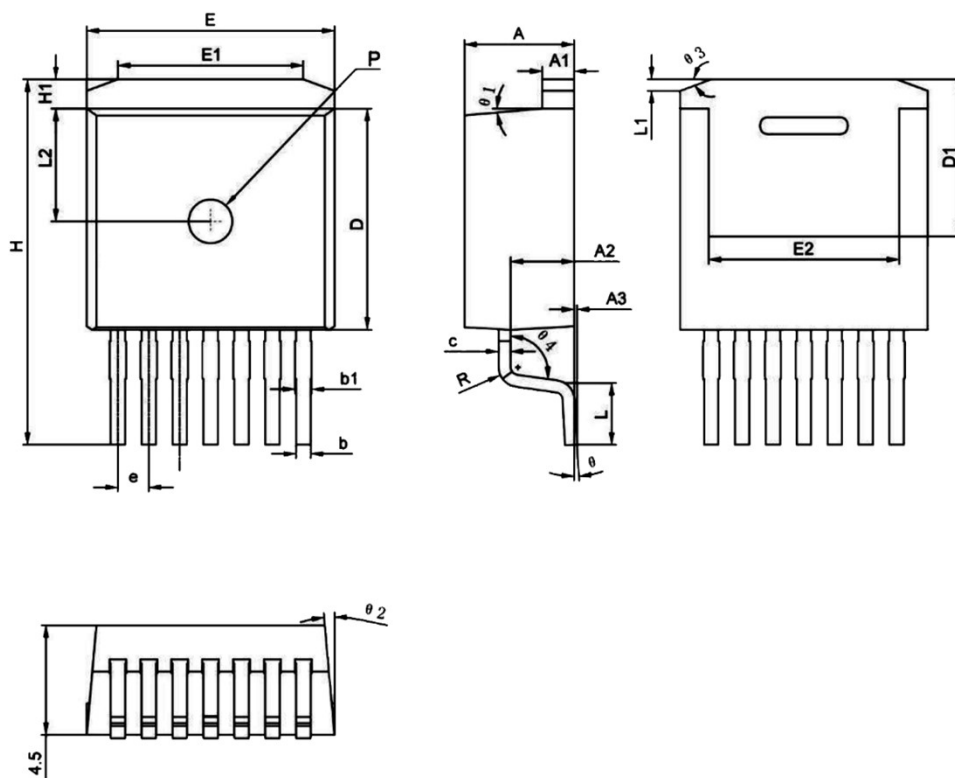



Fig18. Safe Operating Area

Product dimension (TO-267-7L)



Dim	Millimeters			Dim	Millimeters		
	Min	Type	Max		Min	Type	Max
A	4.40	4.50	4.60	e	1.17	1.27	1.37
A1	1.25	1.30	1.40	H	14.75	15.00	15.25
A2	2.45	2.60	2.70	H1	1.10	1.20	1.30
A3	0.05	0.13	0.20	L	2.35	2.55	2.75
b	0.50	0.60	0.70	L1	0.37	0.57	0.77
b1	0.60	0.70	0.85	L2	4.48	4.63	4.78
C	0.45	0.50	0.60	θ	0°	3°	5°
D	8.88	9.08	9.28	$\theta 1$	3°	5°	7°
D1	6.25	6.45	6.65	$\theta 2$	3°	5°	7°
E	9.88	10.18	10.28	$\theta 3$	15°	20°	25°
E1	6.67	7.07	7.47	R	0.75	0.80	0.85
E2	7.67	7.82	7.97	P	1.70	1.80	1.90


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