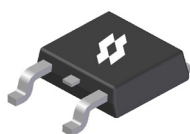
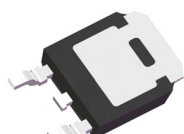


Product Summary

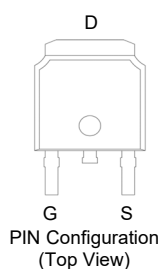
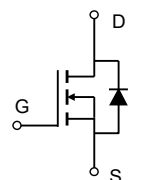
V_{DS}	$R_{DS(ON)_TYP}$	I_{D_MAX}
150 V	50 mΩ @ $V_{GS} = 10V$	19.5 A

TO252-3L


Top View



Bottom View


 PIN Configuration
(Top View)


Schematic Diagram

Features

- Low On-Resistance
- Excellent FoM (figure of merit)
- 100% ΔV_{DS} & UIS & Rg Tested


Applications

- Motor controls
- DC/DC in Telecoms and Industrial
- High frequency switching, synchronous rectification

Mechanical Data

- Green Molding Compound
- Moisture Sensitivity: Level 3 per J-STD-020
- UL Flammability Classification Rating 94V-0

Ordering Information

Orderable Part Number	Package Type	Device Marking	Form	Quantity (pcs)
SMT15T60AHU	TO252-3L	15T60AH	13" Tape&Reel	2,500

Maximum Ratings (@ $T_C = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Value	Unit
Drain - Source Voltage	V_{DS}	150	V
Gate - Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($V_{GS} = 10V$) ⁽¹⁾	I_D	$T_C = 25^\circ\text{C}$ 19.5	A
		$T_C = 100^\circ\text{C}$ 12.3	A
Pulsed Drain Current ⁽²⁾	I_{DM}	60	A
Single Pulse Avalanche Energy ⁽³⁾	E_{AS}	78	mJ
Single Pulse Avalanche Current ($L = 0.1\text{mH}$)	I_{AS}	22	A
Power Dissipation	P_D	$T_C = 25^\circ\text{C}$ 52	W
		$T_C = 100^\circ\text{C}$ 21	W
Junction & Storage Temperature Range	T_J, T_{STG}	-55 ~ +150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance, Junction-to-Ambient ⁽⁴⁾	$R_{\theta JA}$	40	50	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Case ⁽⁵⁾	$R_{\theta JC}$	1.8	2.4	$^\circ\text{C/W}$

Electrical Characteristics (@ $T_J = 25^\circ\text{C}$, unless otherwise specified.)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Off Characteristics ⁽⁶⁾						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	150	-	-	V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 150V, V _{GS} = 0V	-	-	1.0	μA
		T _J = 125°C	-	-	100	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} = 0V	-	-	±100	nA
On Characteristics ⁽⁶⁾						
Gate Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = 250μA	2.5	3.4	4.5	V
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} = 10V, I _D = 10A	-	50	60	mΩ
Forward Transconductance	g _{fs}	V _{DS} = 5.0V, I _D = 10A	-	18	-	S
Diodes Forward Voltage	V _{SD}	I _S = 2.0A, V _{GS} = 0V	-	0.7	1.2	V
Dynamic Characteristics ⁽⁷⁾						
Input Capacitance	C _{iss}	V _{DS} = 75V, V _{GS} = 0V, f = 1MHz	-	732	-	pF
Output Capacitance	C _{oss}		-	65	-	pF
Reverse Transfer Capacitance	C _{rss}		-	7.2	-	pF
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	-	0.9	-	Ω
Switching Characteristics ⁽⁷⁾						
Turn-On DelayTime	t _{d(on)}	V _{GS} = 10V, V _{DS} = 75V I _D = 10A, R _{GEN} = 3.0Ω	-	4.0	-	ns
Rise Time	t _r		-	3.0	-	ns
Turn-Off DelayTime	t _{d(off)}		-	5.9	-	ns
Fall Time	t _f		-	2.1	-	ns
Gate Charge Characteristics ⁽⁷⁾						
Total Gate Charge (V _{GS} = 10V)	Q _g	V _{DS} = 75V, I _D = 10A V _{GS} = 10V	-	6.9	-	nC
Total Gate Charge (V _{GS} = 7.0V)	Q _g		-	5.1	-	nC
Gate-Source Charge	Q _{gs}		-	2.3	-	nC
Gate-Drain Charge	Q _{gd}		-	1.9	-	nC
Gate Plateau Voltage	V _{plateau}		-	5.5	-	V
Drain-Source Diode Characteristics ⁽⁷⁾						
Body Diode Reverse Recovery Time	t _{rr}	I _F = 10A, dI/dt = 100A/μs, T _J = 25°C	-	58	-	ns
Body Diode Reverse Recovery Charge	Q _{rr}		-	120	-	nC
Diode Forward Current	I _S	T _C = 25°C	-	-	19	A

Notes:

1. This current is chip limited, which is calculated based on R_{thjc} .
2. This current is calculated on single pulse with 10us Single Pulse.
3. Defined by design, not subject to production test, E_{AS} condition: $T_J = 25^\circ\text{C}$, $V_{DS} = 75V$, $V_{GS} = 10V$, $L = 1.0mH$.
4. Device mounted on FR-4 substrate PC board with 2oz copper in 1inch square cooling area.
5. Thermal resistance from junction to the exposed pad.
6. Short duration pulse test used to minimize self-heating effect.
7. Defined by design, not subject to production.

Typical Electrical and Thermal Characteristics

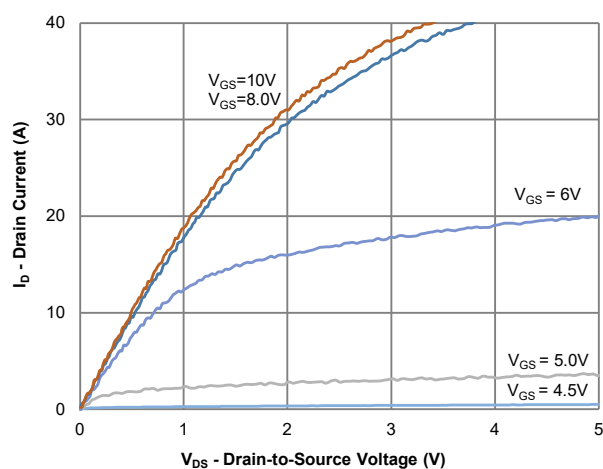


Figure 1: Output Characteristics

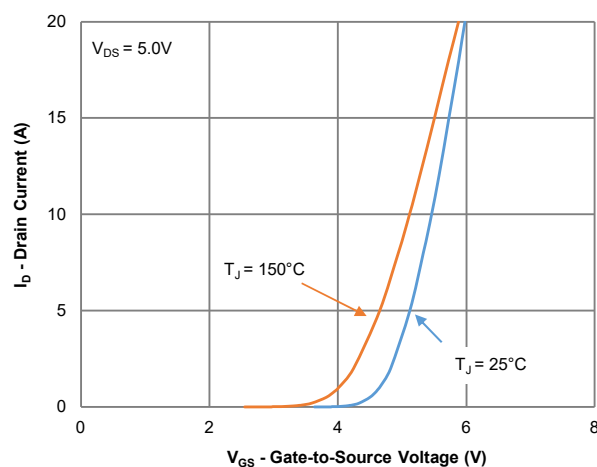


Figure 2: Transfer Characteristics

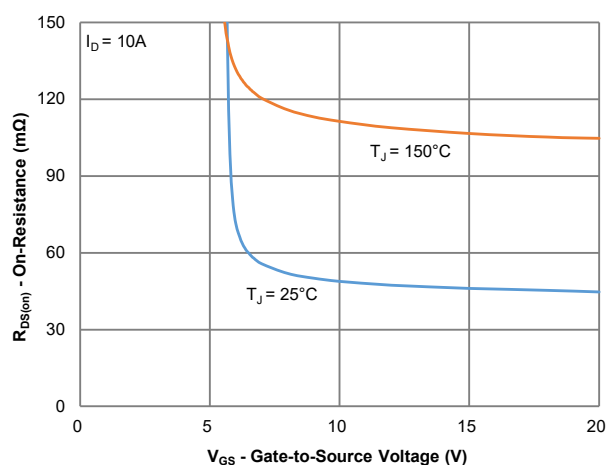


Figure 3: On-Resistance vs. Gate-Source Voltage

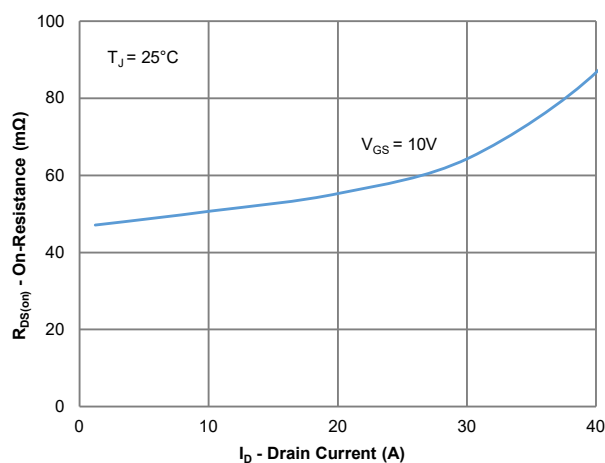


Figure 4: On-Resistance vs. Drain Current and Gate Voltage

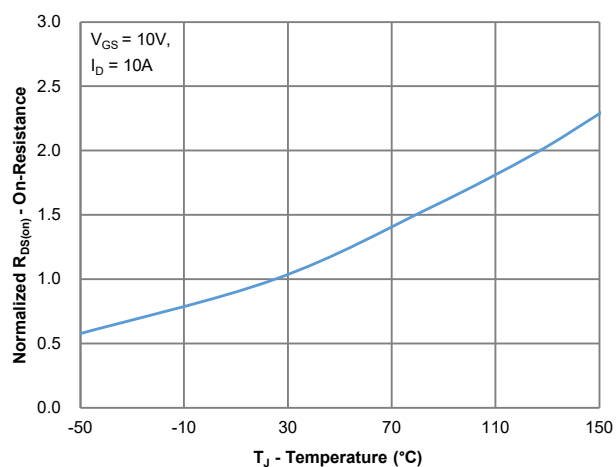


Figure 5: On-Resistance vs. Junction Temperature

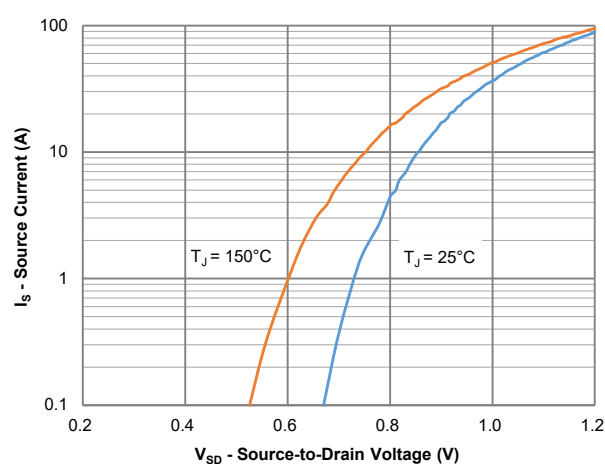


Figure 6: Source-Drain Diode Forward Voltage

Typical Electrical and Thermal Characteristics

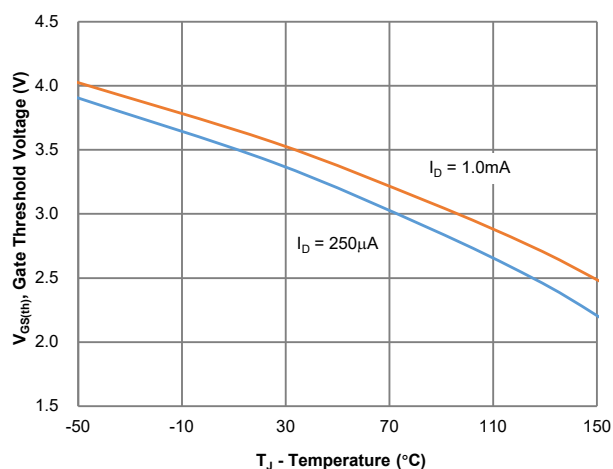


Figure 7: Gate Threshold Variation vs. Junction Temperature

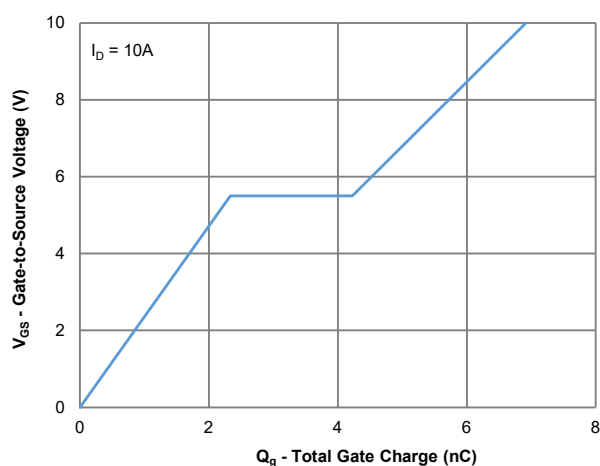


Figure 8: Gate Charge Characteristics

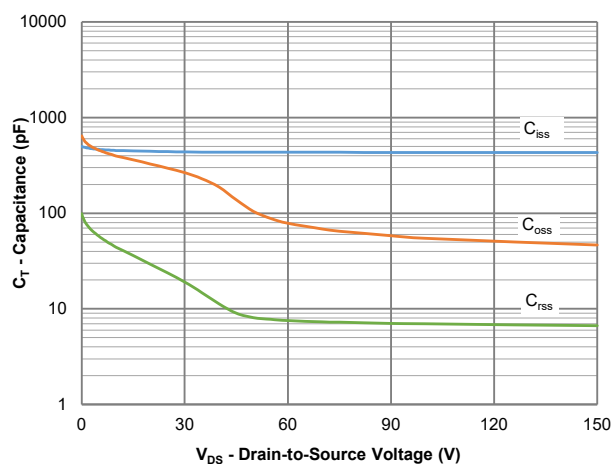


Figure 9: Capacitance Characteristics

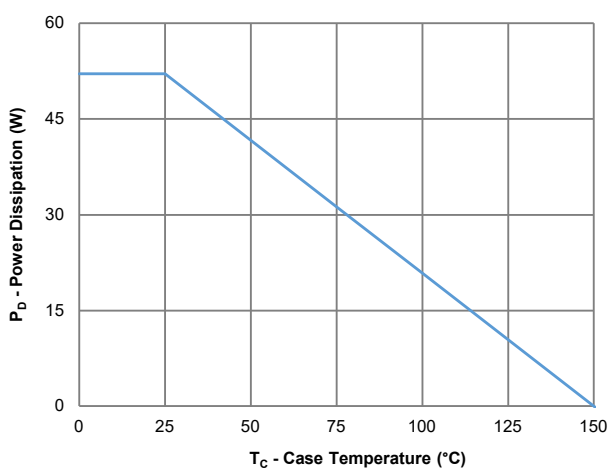


Figure 10: Power Derating

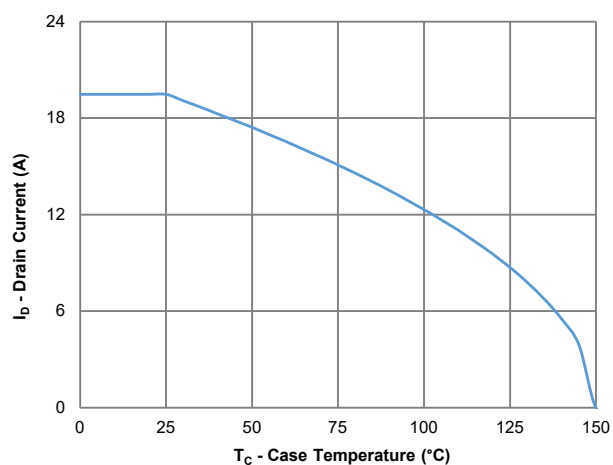


Figure 11: Current Derating

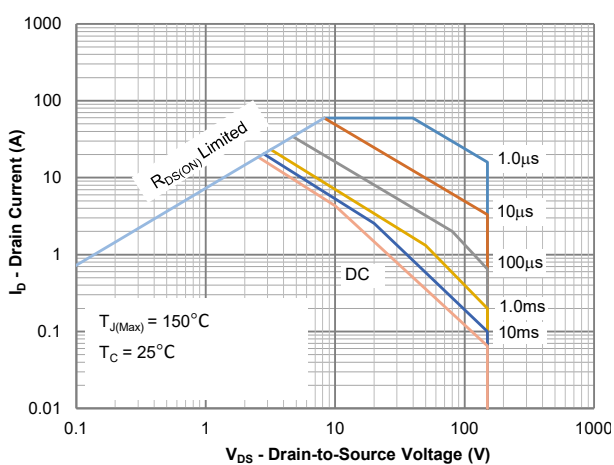


Figure 12: Safe Operating Area

Typical Electrical and Thermal Characteristics

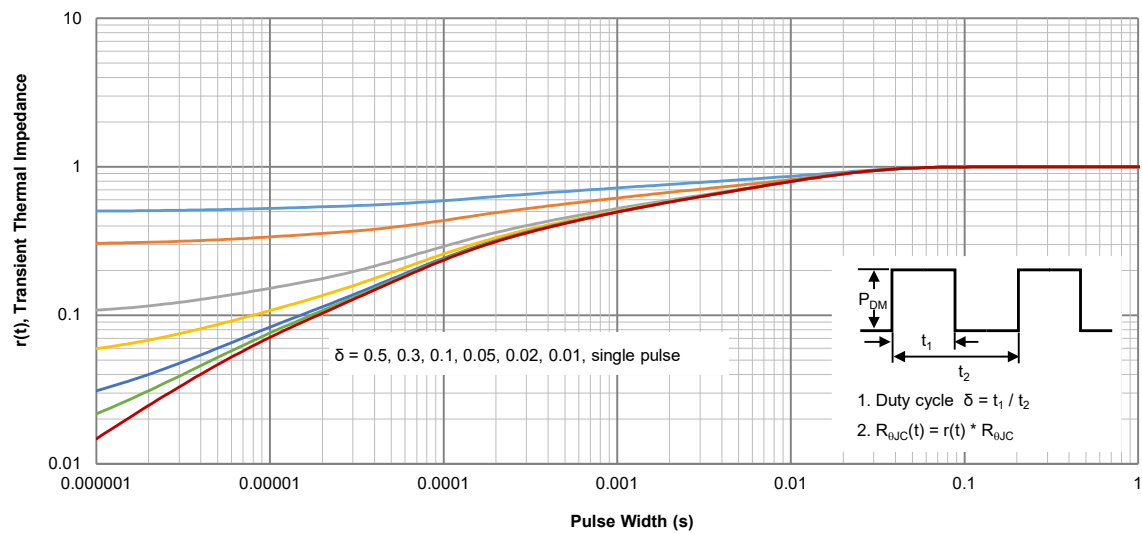
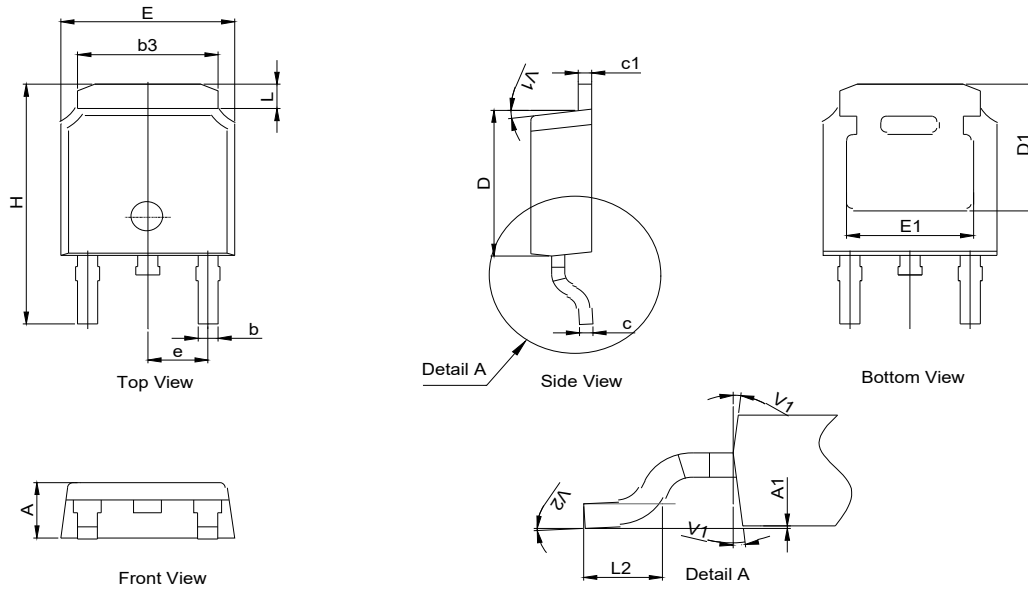
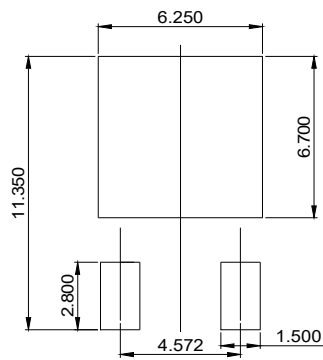


Figure 13: Normalized Maximum Transient Thermal Impedance

TO252-3L Package Outline
Package Outline


DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.20	2.30	2.40
A1	0	-	0.13
b	0.62	0.76	0.90
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40		1.78
V1	7° REF		
V2	0°	-	6°

Recommend Soldering Footprint


DIMENSIONS: MILLIMETERS