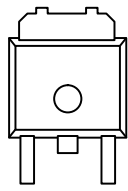


N-Channel Enhancement-Mode Transistors, Logic Level

Product Summary

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D^a (A)
30	0.030	30

TO-252

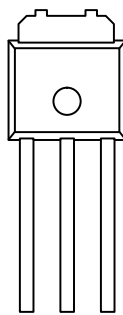


G D S
Top View

Order Number:
SMD30N03-30L

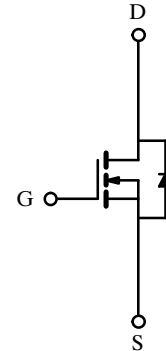
Drain Connected to Tab

TO-251



G D S
Top View

Order Number:
SMU30N03-30L



N-Channel MOSFET

Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^b	I_D	$T_A = 25^\circ\text{C}$	A
		$T_A = 100^\circ\text{C}$	
Pulsed Drain Current	I_{DM}	30	
Continuous Source Current (Diode Conduction)	I_S	6	
Avalanche Current	I_{AR}	30	mJ
Repetitive Avalanche Energy (Duty Cycle $\leq 1\%$)	$L = 0.1 \text{ mH}$	E_{AR}	
Maximum Power Dissipation	P_D	$T_C = 25^\circ\text{C}$	W
		$T_A = 25^\circ\text{C}$	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^b	R_{thJA}		60	$^\circ\text{C}/\text{W}$
Maximum Junction-to-Case	R_{thJC}		2.5	
Case-to-Sink	R_{thCS}	1.0		

Notes:

- Calculated Rating for $T_C = 25^\circ\text{C}$, for comparison purposes only. This cannot be used as continuous rating (see Absolute Maximum Ratings and Typical Characteristics).
- Surface mounted on PC board or mounted vertically in free air.

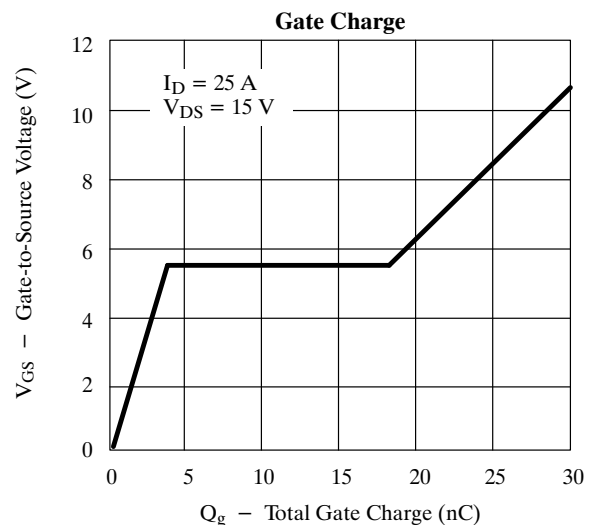
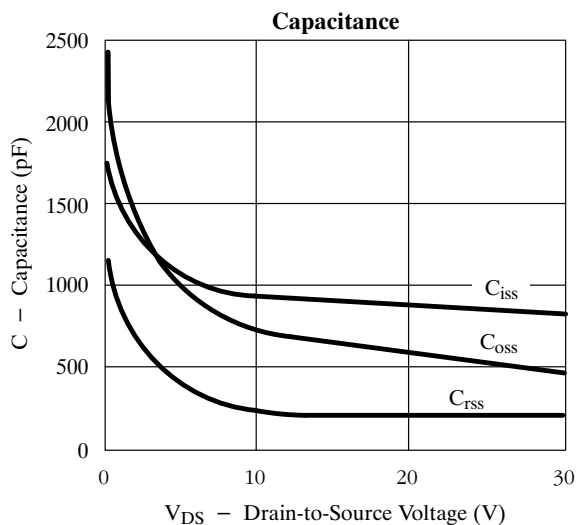
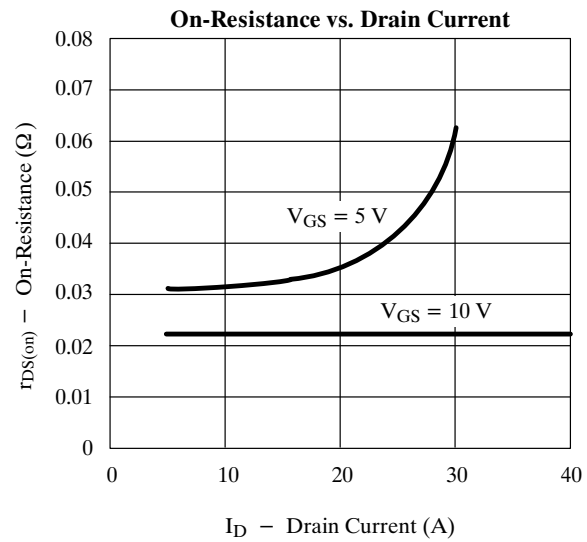
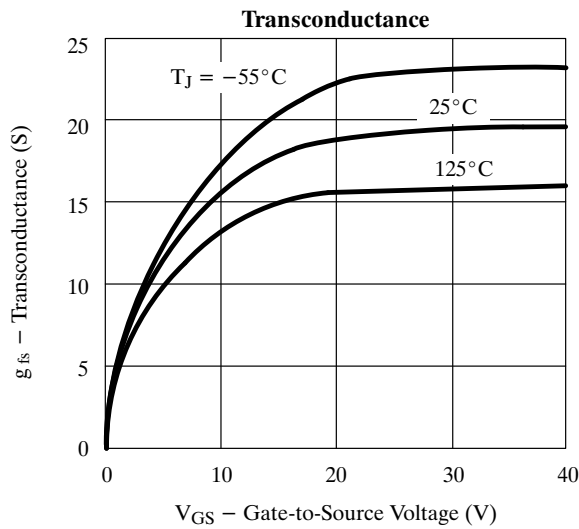
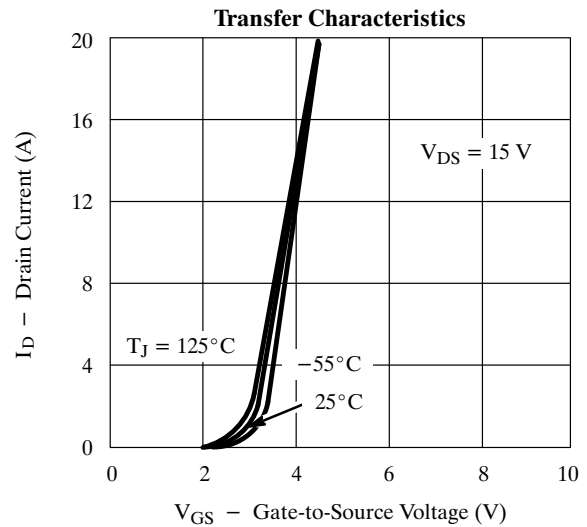
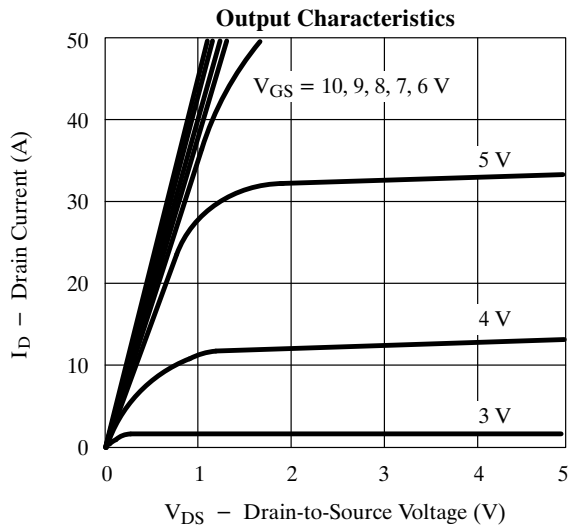
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1\ \text{mA}$	1.0	2.1	3.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 500	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}$			25	μA
		$V_{DS} = 24\text{ V}, V_{GS} = 0\text{ V}, T_J = 125^\circ\text{C}$			250	
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 2\text{ V}, V_{GS} = 10\text{ V}$	30			A
Drain-Source On-State Resistance ^b	$r_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 15\text{ A}$		0.023	0.030	Ω
		$V_{GS} = 10\text{ V}, I_D = 15\text{ A}, T_J = 125^\circ\text{C}$		0.031	0.050	
		$V_{GS} = 5\text{ V}, I_D = 15\text{ A}$		0.035	0.045	
Forward Transconductance ^b	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 15\text{ A}$		15		S
Dynamic						
Input Capacitance	C_{iss}	$V_{GS} = 0\text{ V}, V_{DS} = 25\text{ V}, f = 1\text{ MHz}$		850		pF
Output Capacitance	C_{oss}			500		
Reverse Transfer Capacitance	C_{rss}			220		
Total Gate Charge ^c	Q_g	$V_{DS} = 15\text{ V}, V_{GS} = 10\text{ V}, I_D = 30\text{ A}$		30	35	nC
Gate-Source Charge ^c	Q_{gs}			5	8	
Gate-Drain Charge ^c	Q_{gd}			15	20	
Turn-On Delay Time ^c	$t_{d(on)}$	$V_{DD} = 20\text{ V}, R_L = 0.6\ \Omega$ $I_D \cong 30\text{ A}, V_{GEN} = 10\text{ V}, R_G = 7.5\ \Omega$		9	15	ns
Rise Time ^c	t_r			25	40	
Turn-Off Delay Time ^c	$t_{d(off)}$			27	40	
Fall Time ^c	t_f			25	35	
Source-Drain Diode Ratings and Characteristics ($T_C = 25^\circ\text{C}$)^b						
Pulsed Current	I_{SM}				100	A
Diode Forward Voltage	V_{SD}	$I_F = 6\text{ A}, V_{GS} = 0\text{ V}$		1.1	1.8	V

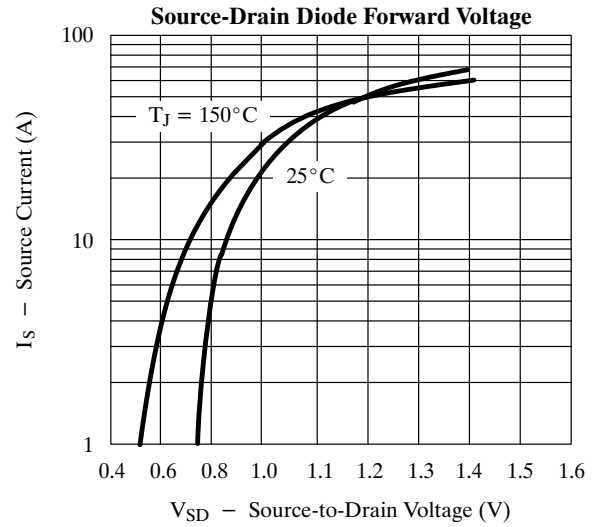
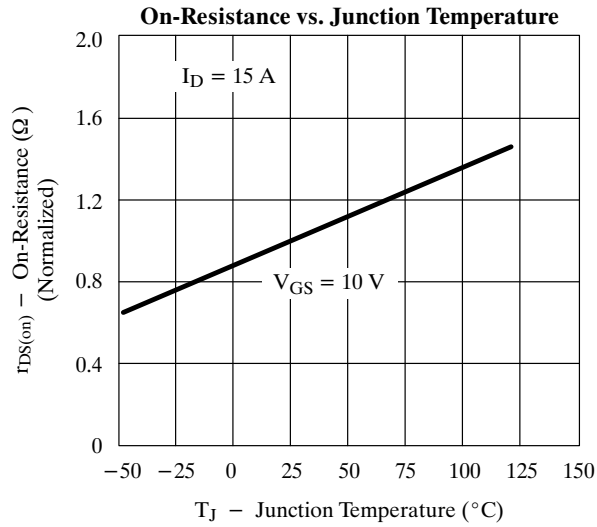
Notes:

- For design aid only; not subject to production testing.
- Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
- Independent of operating temperature.

Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

