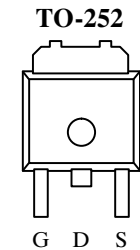


N-Channel Enhancement-Mode Transistors, Logic Level

Product Summary

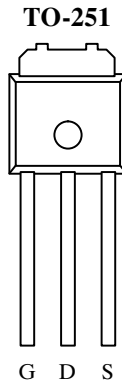
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D^a (A)
50	0.045	25

175°C Rated
Maximum Junction Temperature

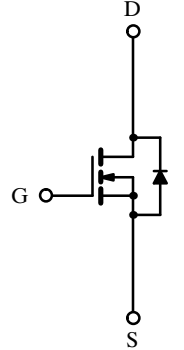


Top View
Order Number:
SMD25N05-45L

Drain Connected to Tab



Top View
Order Number:
SMU25N05-45L



N-Channel MOSFET

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

Parameter		Symbol	Limit	Unit
Gate-Source Voltage		V_{GS}	± 16	V
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^b	$T_A = 25^\circ\text{C}$	I_D	5.0	A
	$T_A = 100^\circ\text{C}$		3.1	
Pulsed Drain Current		I_{DM}	100	
Continuous Source Current (Diode Conduction)		I_S	5	
Avalanche Current		I_{AR}	25	
Repetitive Avalanche Energy (Duty Cycle $\leq 1\%$)	$L = 0.1\text{ mH}$	E_{AR}	31	mJ
Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	50	W
	$T_A = 25^\circ\text{C}$		2 ^b	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^b	R_{thJA}		60	$^\circ\text{C/W}$
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.

Subsequent updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #1411.

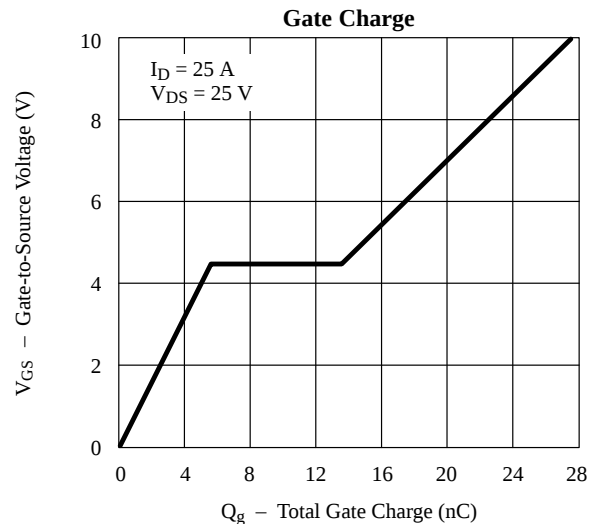
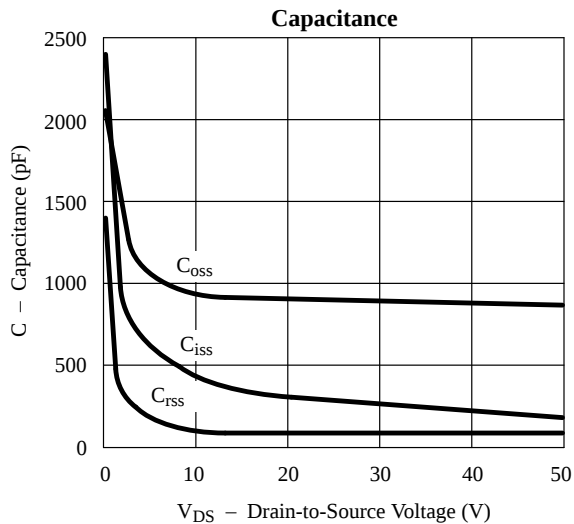
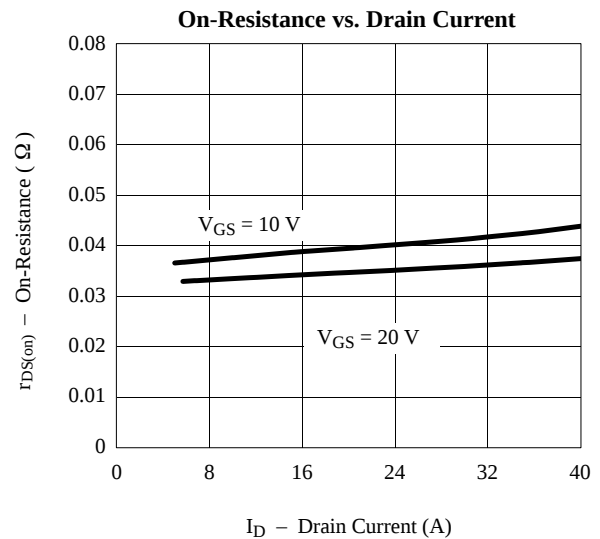
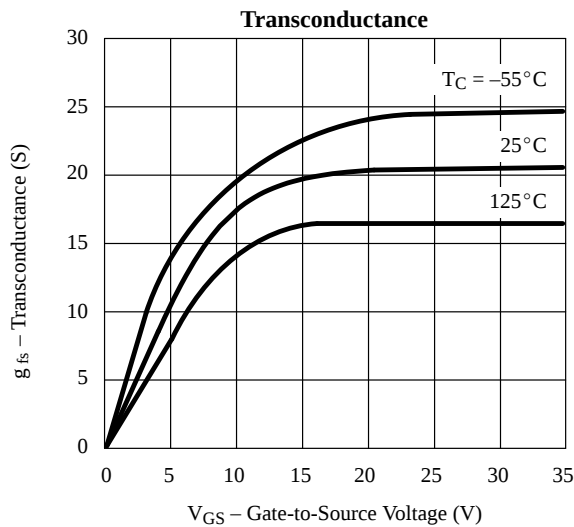
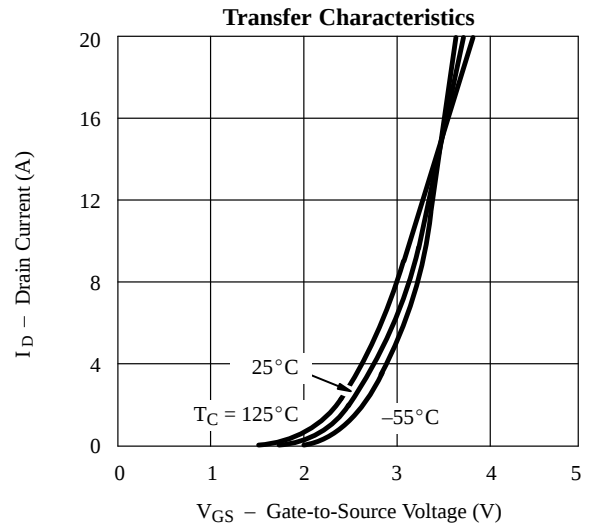
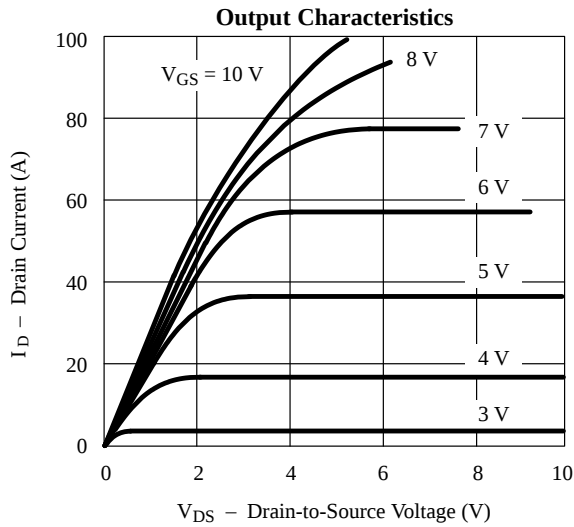
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 μA	50			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 1 mA	1.0	1.8	3.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 16 V			± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40 V, V _{GS} = 0 V			2	μA
		V _{DS} = 40 V, V _{GS} = 0 V, T _J = 125°C			100	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 2 V, V _{GS} = 10V	25			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 12.5 A		0.035	0.045	Ω
		V _{GS} = 10 V, I _D = 12.5 A, T _J = 125°C		0.060	0.080	
		V _{GS} = 5 V, I _D = 12.5 A		0.045	0.070	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 12.5 A		19		S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		950		pF
Output Capacitance	C _{oss}			320		
Reverse Transfer Capacitance	C _{rss}			110		
Total Gate Charge ^c	Q _g	V _{DS} = 25 V, V _{GS} = 10 V, I _D = 25 A		22	36	nC
Gate-Source Charge ^c	Q _{gs}			5	10	
Gate-Drain Charge ^c	Q _{gd}			10	16	
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 25 V, R _L = 1 Ω I _D ≅ 25 A, V _{GEN} = 10 V, R _G = 7.5 Ω		10	20	ns
Rise Time ^c	t _r			21	40	
Turn-Off Delay Time ^c	t _{d(off)}			35	60	
Fall Time ^c	t _f			20	40	
Source-Drain Diode Ratings and Characteristics (T _C = 25°C)						
Pulsed Current	I _{SM}				100	A
Diode Forward Voltage	V _{SD}	I _F = 25 A, V _{GS} = 0 V		1.0	1.8	V
Reverse Recovery Time	t _{rr}	I _F = 25 A, di/dt = 100 A/μs		120		ns

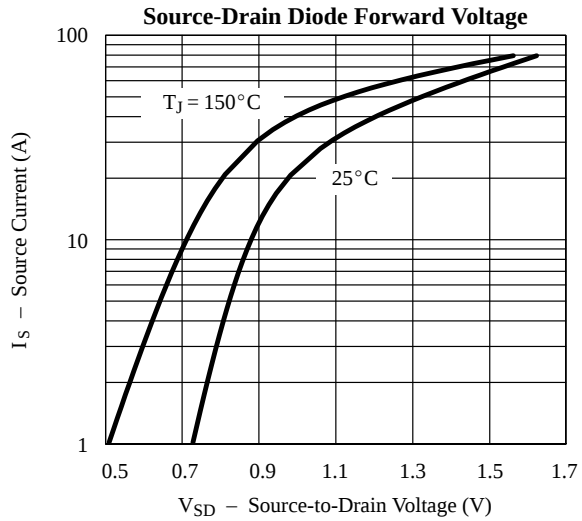
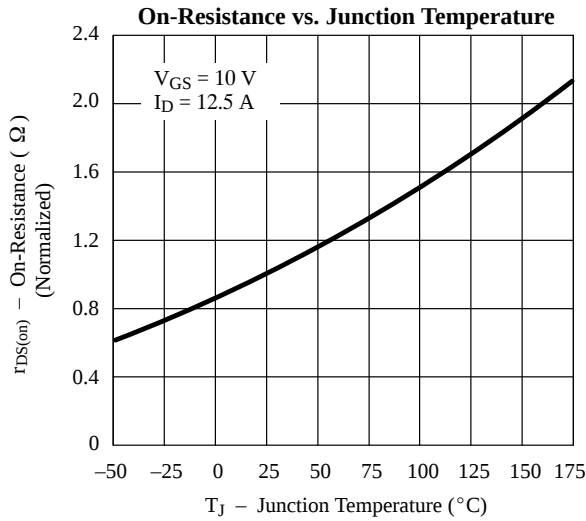
Notes:

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

Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

