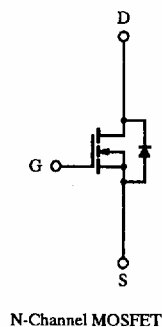
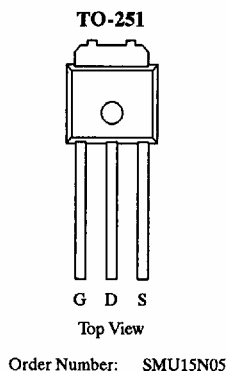
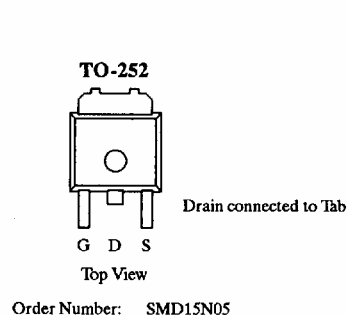


N-Channel Enhancement-Mode Transistors

175°C Maximum Junction Temperature

Product Summary

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D^a (A)
50	0.10	15



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

Parameter		Symbol	SMD15N05	SMU15N05	Unit
Drain-Source Voltage		V_{DS}	50	50	V
Gate-Source Voltage		V_{GS}	± 20	± 20	
Continuous Drain Current ^b	$T_A = 25^{\circ}\text{C}$	I_D	3.3 ^b	2.3 ^c	A
	$T_A = 100^{\circ}\text{C}$		1.9 ^b	1.3 ^c	
Pulsed Drain Current (maximum current limited by package)		I_{DM}	24	24	
Power Dissipation	$T_C = 25^{\circ}\text{C}$	P_D	40	40	W
	$T_A = 25^{\circ}\text{C}$		2.0 ^b	1.0 ^c	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175		$^{\circ}\text{C}$
Lead Temperature ($t_{1/16}''$ from case for 10 sec.)		T_L	300		

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient Free Air, PC Board Mount	R_{thJA}	50	60	$^\circ\text{C/W}$
Junction-to-Ambient Free Air, Vertical Mount			125	
Junction-to-Case	R_{thJC}		3.0	

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.
- Free air, vertical mount.

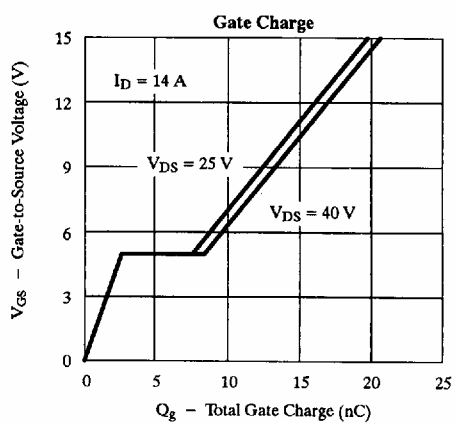
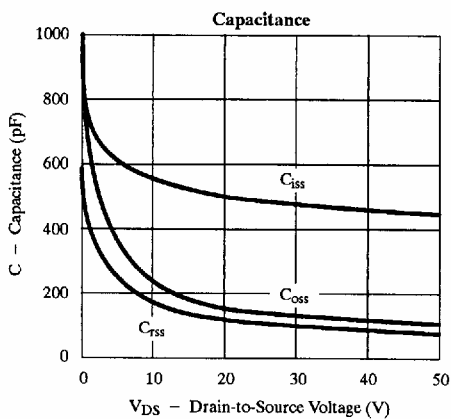
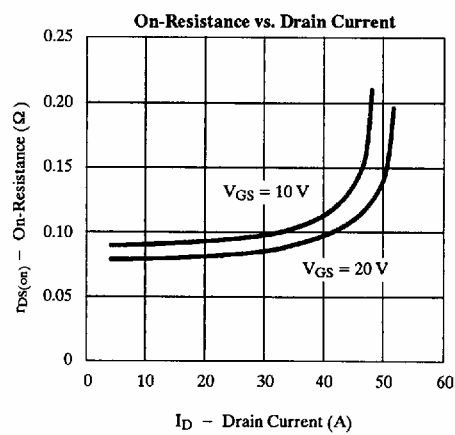
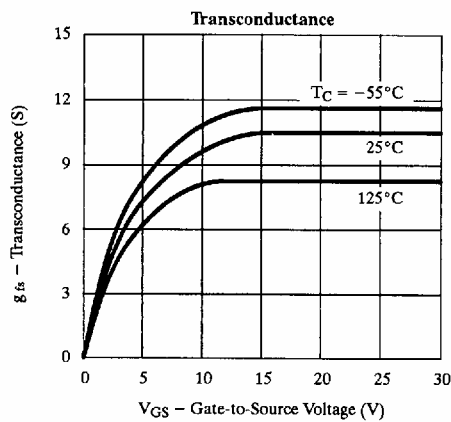
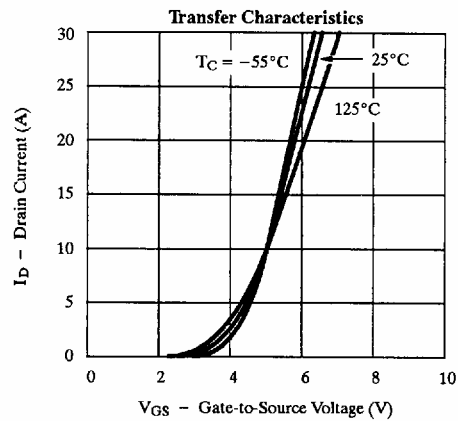
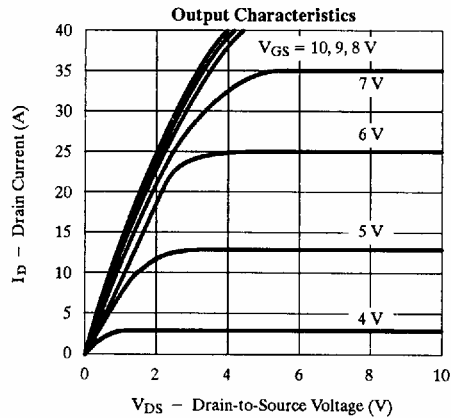
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

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 = 250 μA	2.0		4.0	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 40 V, V _{GS} = 0 V			25	μA
		V _{DS} = 40 V, V _{GS} = 0 V, T _J = 125°C			250	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 10 V	15			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = 10 V, I _D = 7.5 A		0.07	0.10	Ω
		V _{GS} = 10 V, I _D = 7.5 A, T _J = 125°C		0.13	0.18	
Forward Transconductance ^b	g _{fs}	V _{DS} = 15 V, I _D = 7.5 A	3.0	4.8		S
Dynamic						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 25 V, f = 1 MHz		550		pF
Output Capacitance	C _{oss}			320		
Reverse Transfer Capacitance	C _{rss}			100		
Total Gate Charge ^c	Q _g	V _{DS} = 25 V, V _{GS} = 10 V, I _D = 15 A		15	30	nC
Gate-Source Charge ^c	Q _{gs}			3.5		
Gate-Drain Charge ^c	Q _{gd}			5		
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = 25 V, R _L = 1.67 Ω I _D = 15 A, V _{GEN} = 10 V, R _G = 25 Ω		15	30	ns
Rise Time ^c	t _r			50	85	
Turn-Off Delay Time ^c	t _{d(off)}			80	90	
Fall Time ^c	t _f			80	110	
Source-Drain Diode Ratings and Characteristics						
Continuous Current	I _S		SMD15N05		3.3	A
			SMU15N05		1.0	
Pulsed Current	I _{SM}				24	
Forward Voltage ^b	V _{SD}	I _F = 3.3 A, V _{GS} = 0 V		1.8	2.3	V
Reverse Recovery Time	t _{rr}	I _F = 3.3 A, dI _F /dt = 100 A/μs		65		ns
Reverse Recovery Charge	Q _{rr}			0.16		μC

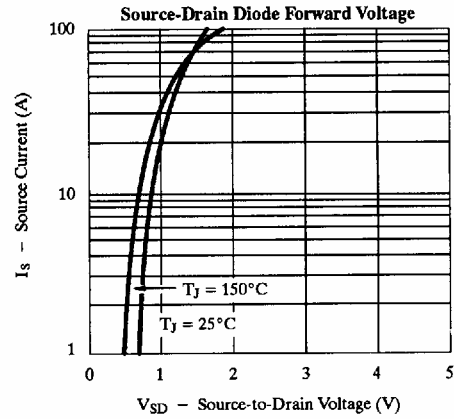
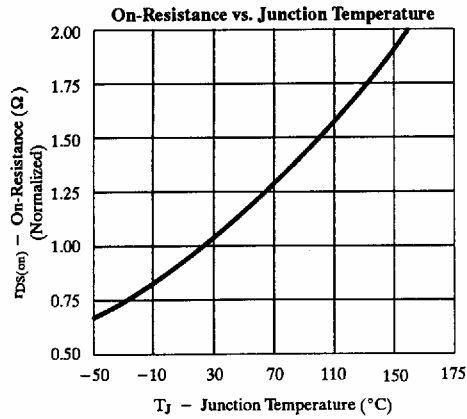
Notes:

- 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.

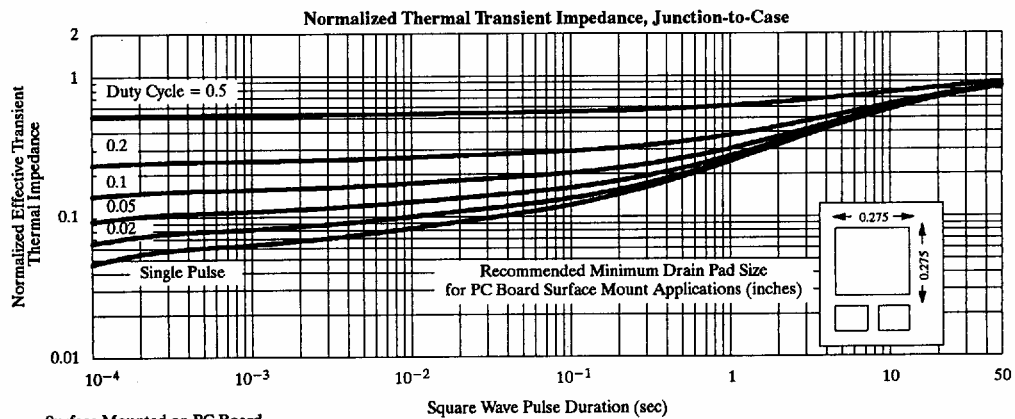
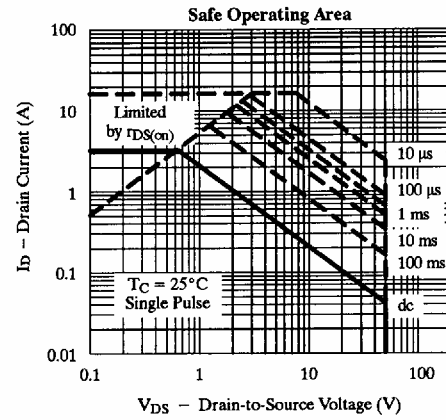
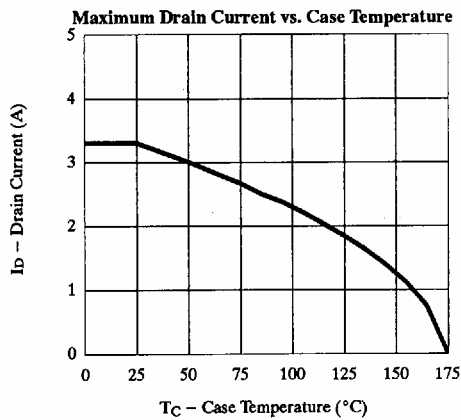
Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings^a



a. Surface Mounted on PC Board.