

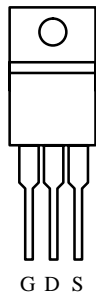
N-Channel Enhancement-Mode MOSFET, 25-mΩ r_{DS(on)}

Product Summary

V _{(BR)DSS} (V)	r _{DS(on)} (Ω)	I _D (A)
60	0.025	50

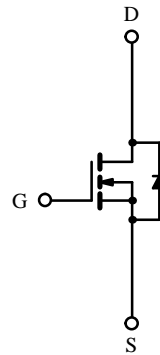
175°C Rated
Maximum Junction Temperature

TO-220AB



Top View

DRAIN connected to TAB



N-Channel MOSFET

Absolute Maximum Ratings (T_C = 25°C Unless Otherwise Noted)

Parameter	Symbol	Limit	Unit	
Drain-Source Voltage	V _{DS}	60	V	
Gate-Source Voltage	V _{GS}	± 20		
Continuous Drain Current (T _J = 175°C)	I _D	T _C = 25°C	50	A
		T _C = 100°C	35	
Pulsed Drain Current	I _{DM}	130		
Continuous Source Current (Diode Conduction)	I _S	50		
Avalanche Current	I _{AR}	50		
Avalanche Energy	E _{AS}	125	mJ	
Repetitive Avalanche Energy ^a	E _{AR}	62.5		
Maximum Power Dissipation	P _D	T _C = 25°C	131	W
		T _C = 100°C	65	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55 to 175	°C	
Lead Temperature (¹ / ₁₆ " from case for 10 sec.)	T _L	300		

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient	R _{thJA}		80	°C/W
Maximum Junction-to-Case	R _{thJC}		1.14	
Case-to-Sink	R _{thCS}	1.0		

Notes:

a. Duty cycle ≤ 1%

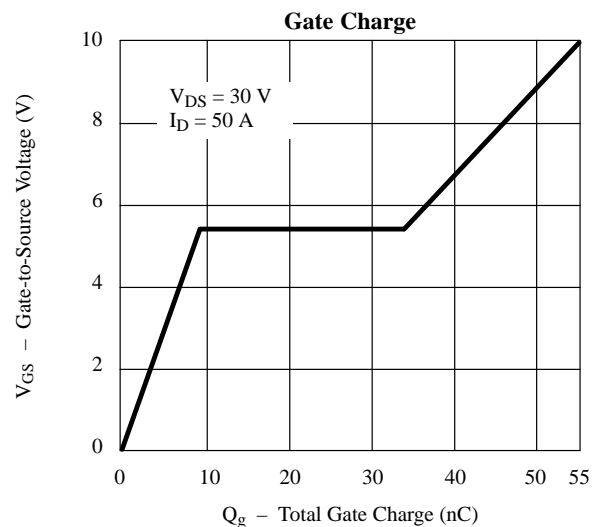
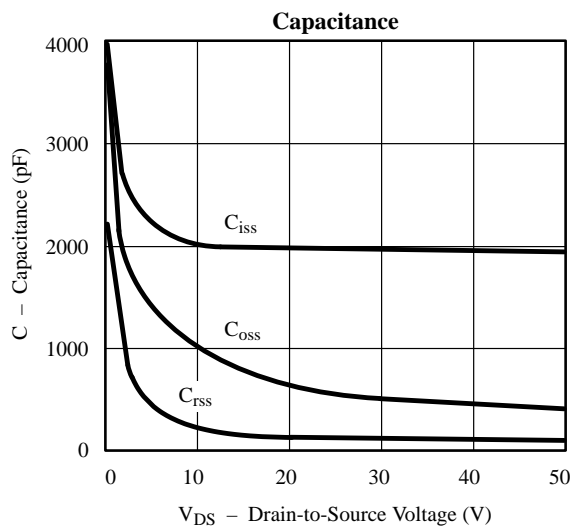
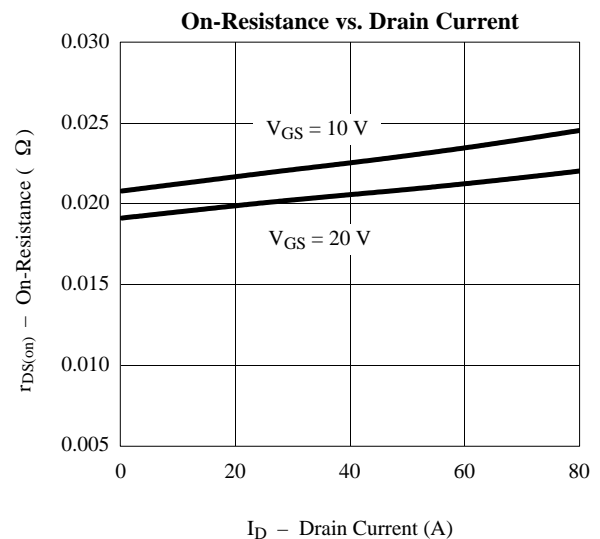
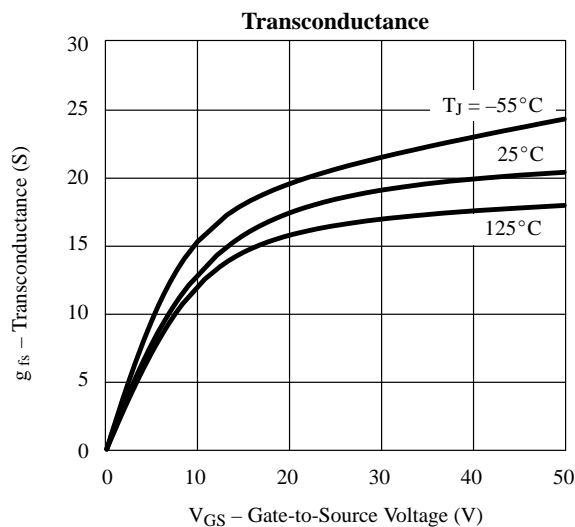
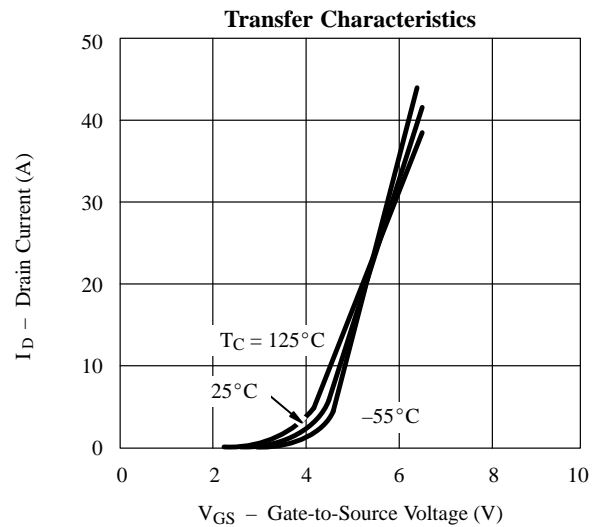
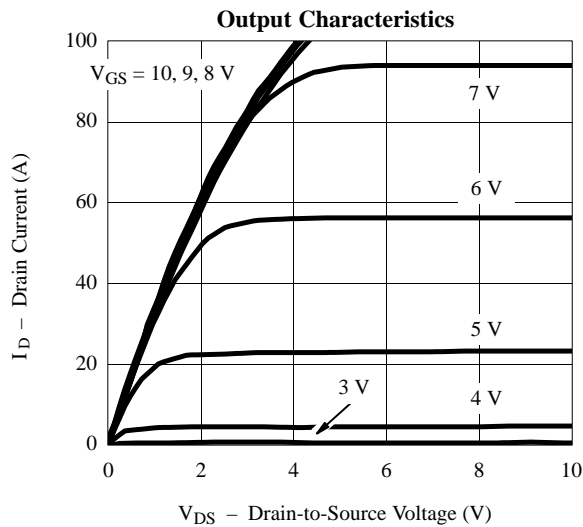
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Test Condition	Min	Typ ^a	Max	Unit
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{ V}, I_D = 250\ \mu\text{A}$	60			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 1\ \text{mA}$	2		4	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}	$V_{DS} = 48\ \text{V}, V_{GS} = 0\ \text{V}$			25	μA
		$V_{DS} = 48\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 125^\circ\text{C}$			250	
		$V_{DS} = 48\ \text{V}, V_{GS} = 0\ \text{V}, T_J = 175^\circ\text{C}$			500	
On-State Drain Current ^b	$I_{D(on)}$	$V_{DS} = 10\ \text{V}, V_{GS} = 10\ \text{V}$	50			A
Drain-Source On-State Resistance ^b	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}, I_D = 25\ \text{A}$		0.020	0.025	Ω
		$V_{GS} = 10\ \text{V}, I_D = 25\ \text{A}, T_J = 125^\circ\text{C}$		0.033	0.042	
		$V_{GS} = 10\ \text{V}, I_D = 25\ \text{A}, T_J = 175^\circ\text{C}$		0.043	0.0525	
Forward Transconductance ^b	g_{fs}	$V_{DS} = 15\ \text{V}, I_D = 25\ \text{A}$		20		S
Dynamic						
Input Capacitance	C_{iss}	$V_{GS} = 0\ \text{V}, V_{DS} = 25\ \text{V}, f = 1\ \text{MHz}$		2000		nC
Output Capacitance	C_{oss}			570		
Reverse Transfer Capacitance	C_{rss}			120		
Total Gate Charge	Q_g	$V_{DS} = 30\ \text{V}, V_{GS} = 10\ \text{V}, I_D = 50\ \text{A}$		55	80	nC
Gate-Source Charge	Q_{gs}			9	15	
Gate-Drain Charge	Q_{gd}			24	40	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 30\ \text{V}, R_L = 0.6\ \Omega$ $I_D \cong 50\ \text{A}, V_{GEN} = 10\ \text{V}, R_G = 2.5\ \Omega$		15	30	ns
Rise Time	t_r			20	35	
Turn-Off Delay Time	$t_{d(off)}$			40	65	
Fall Time	t_f			15	30	
Source-Drain Diode Ratings and Characteristics						
Diode Forward Voltage ^b	V_{SD}	$I_F = 50\ \text{A}, V_{GS} = 0\ \text{V}$			2.0	V
Reverse Recovery Time	t_{rr}	$I_F = 50\ \text{A}, di/dt = 100\ \text{A}/\mu\text{s}$		130		ns
Peak Reverse Recovery Current	$I_{RM(rec)}$			10		A
Reverse Recovery Charge	Q_{rr}			0.7		μC

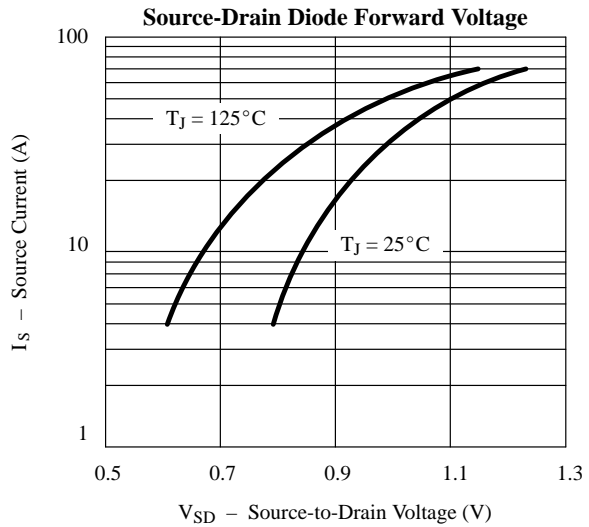
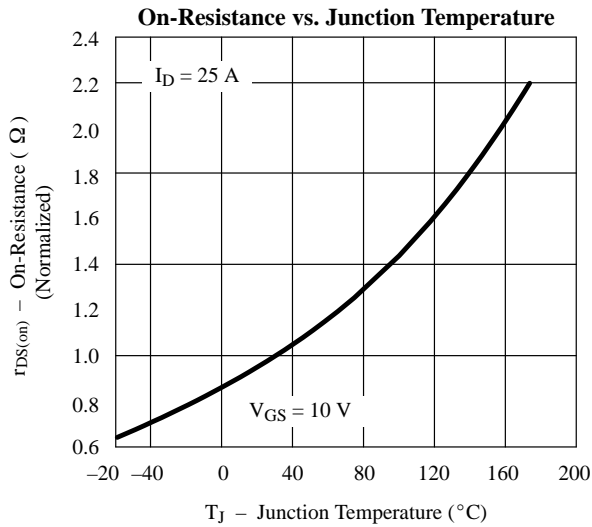
Notes:

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

Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)



Thermal Ratings

