

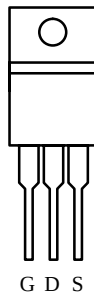
P-Channel Enhancement-Mode Transistor

Product Summary

$V_{(BR)DSS}$ (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-60	0.045	-40

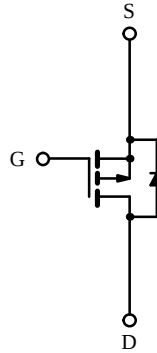
175°C Rated
Maximum Junction Temperature

TO-220AB



Top View

DRAIN connected to TAB



P-Channel MOSFET

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

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current	$T_C = 25^\circ\text{C}$	I_D	-40	A
	$T_C = 100^\circ\text{C}$		-30	
Pulsed Drain Current		I_{DM}	-100	
Avalanche Current		I_{AR}	-40	
Avalanche Energy	$L = 0.1\text{ mH}$	E_{AS}	90	mJ
Repetitive Avalanche Energy ^a	$L = 0.05\text{ mH}$	E_{AR}	45	
Power Dissipation	$T_C = 25^\circ\text{C}$	P_D	125	W
	$T_C = 100^\circ\text{C}$		62	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

Thermal Resistance Ratings

Parameter	Symbol	Typical	Maximum	Unit
Junction-to-Ambient	R_{thJA}		80	$^\circ\text{C/W}$
Junction-to-Case	R_{thJC}		1.2	
Case-to-Sink	R_{thCS}	1.0		

Notes:

a. Duty cycle $\leq 1\%$.

Subsequent updates to this data sheet may be obtained via facsimile by calling Siliconix FaxBack, 1-408-970-5600. Please request FaxBack document #1433.

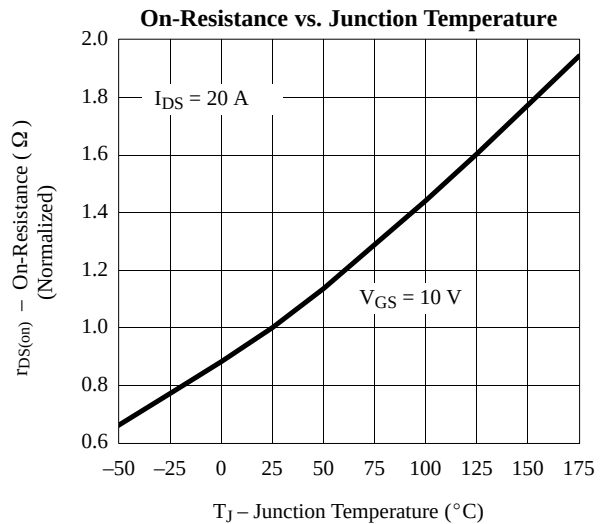
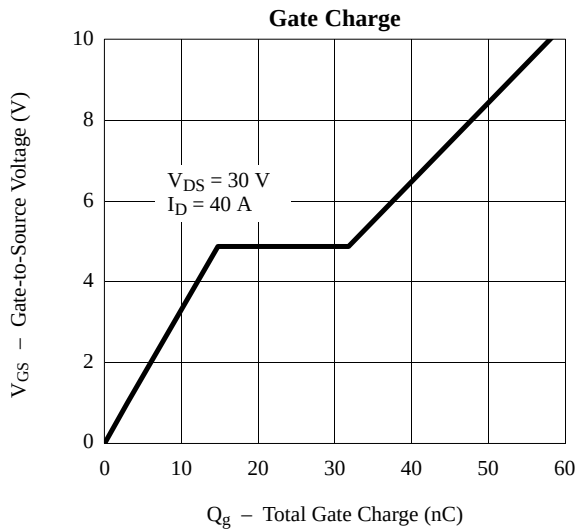
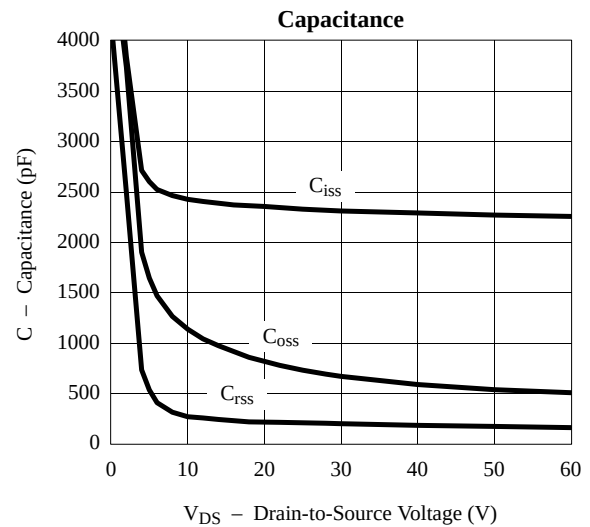
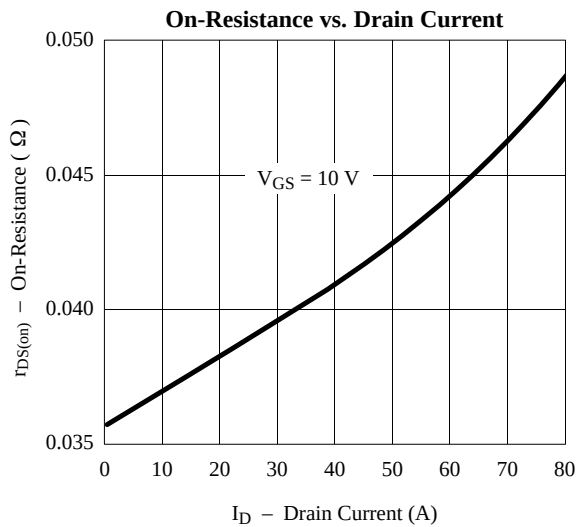
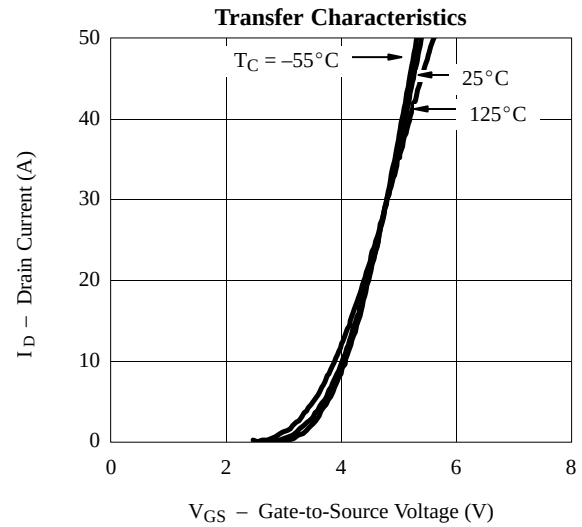
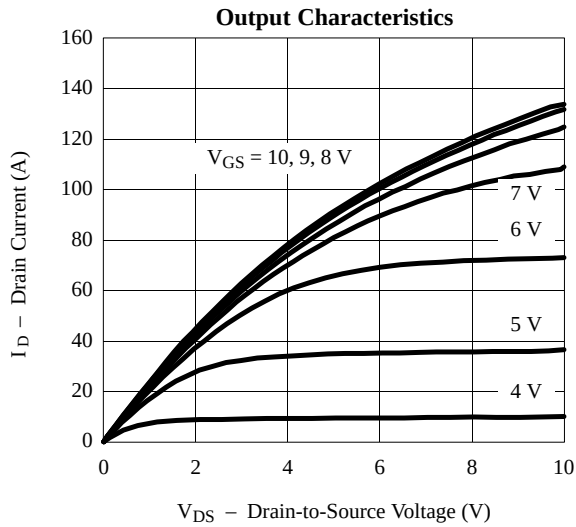
Specifications ($T_J = 25^\circ\text{C}$ Unless Otherwise Noted)

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	−60			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = −1 mA	−1		−3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±500	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = −48 V, V _{GS} = 0 V			−25	μA
		V _{DS} = −48 V, V _{GS} = 0 V, T _J = 125°C			−250	
		V _{DS} = −48 V, V _{GS} = 0 V, T _J = 175°C			−500	
On-State Drain Current ^b	I _{D(on)}	V _{DS} = −10 V, V _{GS} = −10 V	−40			A
Drain-Source On-State Resistance ^b	r _{DS(on)}	V _{GS} = −10 V, I _D = −20 A		0.038	0.045	Ω
		V _{GS} = −10 V, I _D = −20 A, T _J = 125°C			0.080	
		V _{GS} = −10 V, I _D = −20 A, T _J = 175°C			0.090	
Forward Transconductance ^b	g _{fs}	V _{DS} = −15 V, I _D = −20 A		28		S
Dynamic ^a						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = −25 V, f = 1 MHz		2600		pF
Output Capacitance	C _{oss}			800		
Reverse Transfer Capacitance	C _{rss}			200		
Total Gate Charge ^c	Q _g	V _{DS} = −30 V, V _{GS} = −10 V, I _D = −40 A		60	100	nC
Gate-Source Charge ^c	Q _{gs}			15	20	
Gate-Drain Charge ^c	Q _{gd}			17	50	
Turn-On Delay Time ^c	t _{d(on)}	V _{DD} = −30 V, R _L = 1.5 Ω I _D ≅ −20 A, V _{GEN} = −10 V, R _G = 2.5 Ω		11	30	ns
Rise Time ^c	t _r			12	35	
Turn-Off Delay Time ^c	t _{d(off)}			70	140	
Fall Time ^c	t _f			75	150	
Source-Drain Diode Ratings and Characteristics (T _C = 25°C)						
Continuous Current	I _S				−40	A
Pulsed Current	I _{SM}				−100	
Forward Voltage ^b	V _{SD}	I _F = −40 A, V _{GS} = 0 V		−1.2	−1.6	V
Reverse Recovery Time	t _{rr}	I _F = −40 A, dI _F /dt = 100 A/μs		81		ns
Peak Reverse Recovery Current	I _{RM(REC)}			7		A
Reverse Recovery Charge	Q _{rr}			0.3		μC

Notes:

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

Typical Characteristics (25°C Unless Otherwise Noted)



Typical Characteristics (25°C Unless Otherwise Noted)

