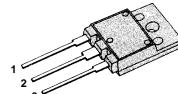


FEATURES

- Avalanche Rugged Technology
- Rugged Gate Oxide Technology
- Lower Input Capacitance
- Improved Gate Charge
- Extended Safe Operating Area
- Lower Leakage Current: $25\mu\text{A}$ (Max.) @ $V_{DS} = 800\text{V}$
- Lower $R_{DS(\text{ON})}$: 0.746Ω (Typ.)

$BV_{DSS} = 800\text{V}$
 $R_{DS(\text{ON})} = 0.95\Omega$
 $I_D = 10\text{A}$

TO-3P



1. Gate 2. Drain 3. Source

ABSOLUTE MAXIMUM RATINGS

Symbol	Characteristics	Value	Units
V_{DSS}	Drain-to-Source Voltage	800	V
I_D	Continuous Drain Current ($T_C = 25^\circ\text{C}$)	10	A
	Continuous Drain Current ($T_C = 100^\circ\text{C}$)	6.3	
I_{DM}	Drain Current-Pulsed ①	40	A
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}	Single Pulsed Avalanche Energy ②	533	mJ
I_{AR}	Avalanche Current ①	10	A
E_{AR}	Repetitive Avalanche Energy ①	28	mJ
dv/dt	Peak Diode Recovery dv/dt ③	2.0	V/ns
P_D	Total Power Dissipation ($T_C = 25^\circ\text{C}$)	280	W
	Linear Derating Factor	2.22	$W/W^\circ\text{C}$
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 to +150	$^\circ\text{C}$
T_L	Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5-seconds	300	

THERMAL RESISTANCE

Symbol	Characteristics	Typ.	Max.	Units
$R_{\theta JC}$	Junction-to-Case	-	0.45	$^\circ\text{C}/\text{W}$
$R_{\theta CS}$	Case-to-Sink	0.24	-	
$R_{\theta JA}$	Junction-to-Ambient	-	40	

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise specified)

Symbol	Characteristics	Min.	Typ.	Max.	Units	Test Conditions
BV_{DSS}	Drain-Source Breakdown Voltage	800	—	—	V	$V_{GS}=0\text{V}, I_D=250\mu\text{A}$
$\Delta BV/\Delta T_J$	Breakdown Voltage Temp. Coeff.	—	1.02	—	$\text{V}/^\circ\text{C}$	$I_D=250\mu\text{A}$, See Fig 7
$V_{GS(\text{th})}$	Gate Threshold Voltage	2.0	—	3.5	V	$V_{DS}=5\text{V}, I_D=250\mu\text{A}$
I_{GSS}	Gate-Source Leakage, Forward	—	—	100	nA	$V_{GS}=30\text{V}$
	Gate-Source Leakage, Reverse	—	—	-100		$V_{GS}=-30\text{V}$
I_{DSS}	Drain-to-Source Leakage Current	—	—	25	μA	$V_{DS}=800\text{V}$
		—	—	250		$V_{DS}=640\text{V}, T_C=125^\circ\text{C}$
$R_{DS(\text{on})}$	Static Drain-Source On-State Resistance	—	—	0.95	Ω	$V_{GS}=10\text{V}, I_D=5\text{A}$ ④
g_{fs}	Forward Transconductance	—	8.43	—	S	$V_{DS}=50\text{V}, I_D=5\text{A}$ ④
C_{iss}	Input Capacitance	—	2700	3500	pF	$V_{GS}=0\text{V}, V_{DS}=25\text{V}$
C_{oss}	Output Capacitance	—	260	300		$f=1\text{MHz}$
C_{rss}	Reverse Transfer Capacitance	—	110	130		See Fig 5
$t_{d(on)}$	Turn-On Delay Time	—	29	70	ns	$V_{DD}=400\text{V}, I_D=10\text{A}$ $R_G=9.6\Omega$ See Fig 13 ④ ⑤
t_r	Rise Time	—	58	315		
$t_{d(off)}$	Turn-Off Delay Time	—	152	235		
t_f	Fall Time	—	48	105		
Q_g	Total Gate Charge	—	125	165	nC	$V_{DS}=640\text{V}, V_{GS}=10\text{V}$
Q_{gs}	Gate-Source Charge	—	19.2	—		$I_D=10\text{A}$
Q_{gd}	Gate-Drain (Miller) Charge	—	45.4	—		See Fig 6 & Fig 12 ④ ⑤

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS

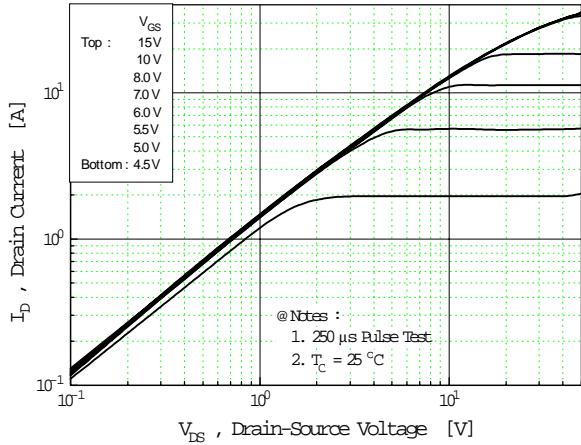
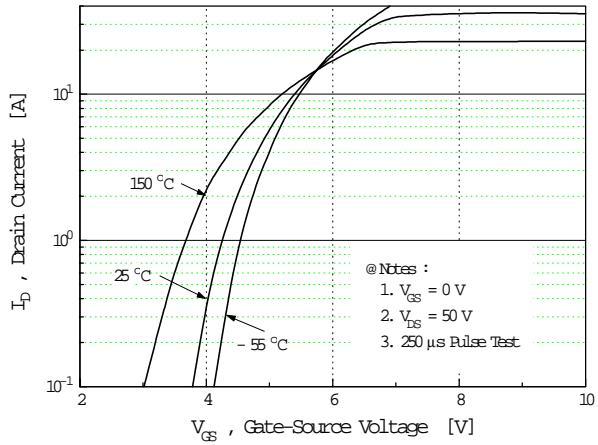
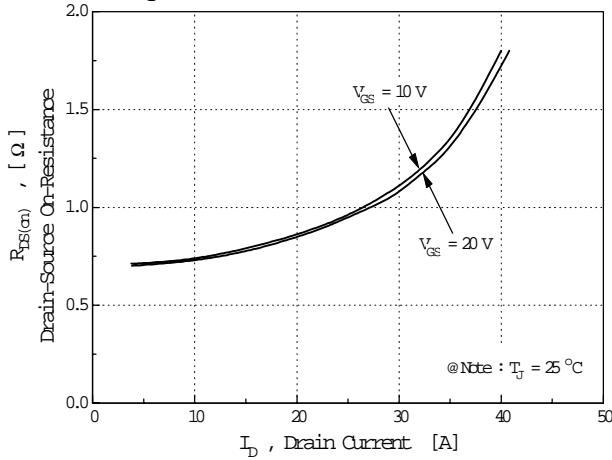
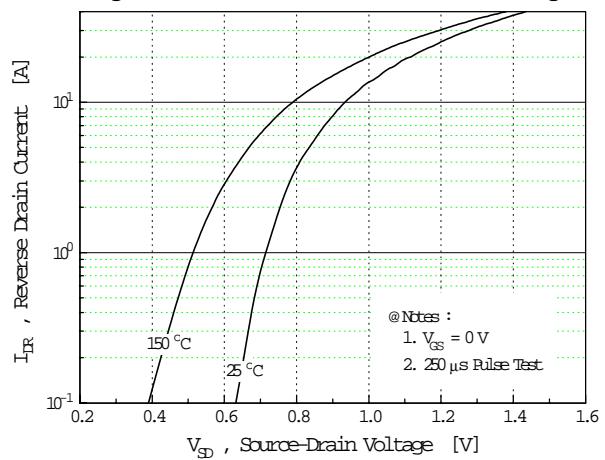
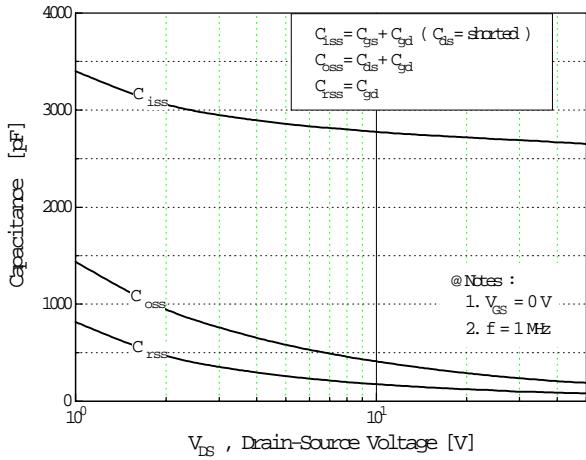
Symbol	Characteristics	Min.	Typ.	Max.	Units	Test Conditions
I_S	Continuous Source Current	—	—	10	A	Integral reverse pn-diode in the MOSFET
I_{SM}	Pulsed-Source Current ①	—	—	40		
V_{SD}	Diode Forward Voltage ④	—	—	1.4	V	$T_J=25^\circ\text{C}, I_S=10\text{A}, V_{GS}=0\text{V}$
t_{rr}	Reverse Recovery Time	—	620	—	ns	$T_J=25^\circ\text{C}, I_F=10\text{A}$ $di_F/dt=100\text{A}/\mu\text{s}$ ④
Q_{rr}	Reverse Recovery Charge	—	10.17	—		

Notes:

① Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

② $L=10\text{mH}, I_{AS}=10\text{A}, V_{DD}=50\text{V}, R_G=27\Omega$, Starting $T_J=25^\circ\text{C}$ ③ $I_{SD} \leq 10\text{A}, di/dt \leq 200\text{A}/\mu\text{s}, V_{DD} \leq BV_{DSS}$, Starting $T_J=25^\circ\text{C}$ ④ Pulse Test: Pulse Width $\leq 250\mu\text{s}$, Duty Cycle $\leq 2\%$

⑤ Essentially Independent of Operating Temperature

Fig 1. Output Characteristics**Fig 2. Transfer Characteristics****Fig 3. On-Resistance vs. Drain Current****Fig 4. Source-Drain Diode Forward Voltage****Fig 5. Capacitance vs. Drain-Source Voltage****Fig 6. Gate Charge vs. Gate-Source Voltage**