Absolute Maximum Ratings (Ta=25°C)

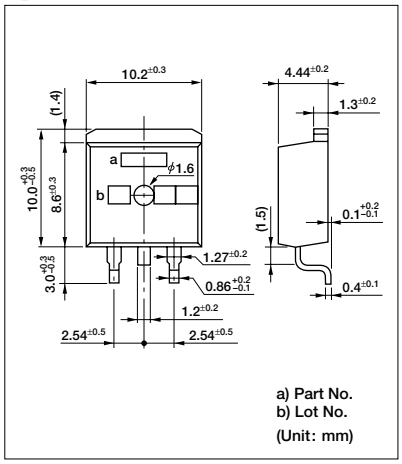
Symbol	Ratings	Unit
V_{DSS}	40	V
V_{GSS}	+20, –10	V
I_D	±60	A
$I_{D\ (pulse)}$*	±180	A
P_D	60 (Tc=25°C)	W
Tch	150	°C
Tstg	–55 to +150	°C

* $P_W \leqq 100\mu s$, duty $\leqq 1\%$

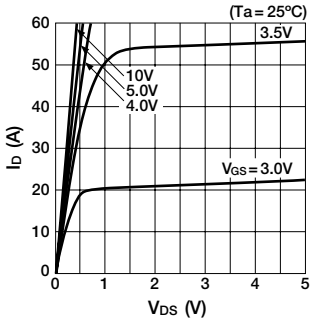
Electrical Characteristics (Ta=25°C)

Symbol	Test Conditions	Ratings min	Ratings typ	Ratings max	Unit
$V_{(BR)\ DSS}$	$I_D=100\mu A$, $V_{GS}=0V$	40			V
I_{GSS}	$V_{GS}=+20V$			+10	μA
	$V_{GS}=-10V$			–5	
I_{DSS}	$V_{DS}=40V$, $V_{GS}=0V$			100	μA
V_{TH}	$V_{DS}=10V$, $I_D=250\mu A$	1.3		2.3	V
$R_{e\ (yfs)}$	$V_{DS}=10V$, $I_D=25A$	20.0			S
$R_{DS\ (ON)}$	$V_{GS}=10V$, $I_D=25A$		7	9	mΩ
Ciss	$V_{DS}=10V$		2800		pF
Coss	f=1.0MHz		1400		pF
Crss	$V_{GS}=0V$		600		pF
$t_{d\ (on)}$	$I_D=25A$		20		ns
t_r	$V_{DD}=12V$		600		ns
$t_{d\ (off)}$	$R_L=0.48\Omega$		250		ns
t_f	$V_{GS}=10V$		100		ns
V_{SD}	$I_{SD}=50A$, $V_{GS}=0V$		1.0	1.5	V

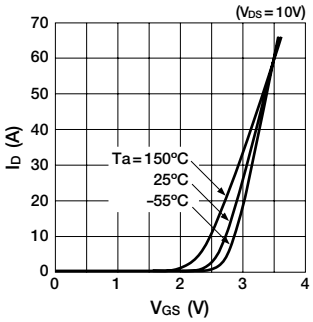
External Dimensions TO220S



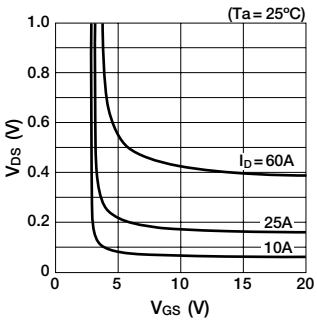
■ I_D — V_{DS} Characteristics (typ.)



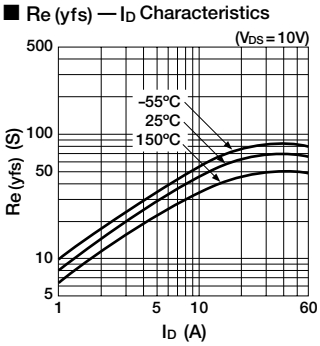
■ I_D — V_{GS} Characteristics (typ.)



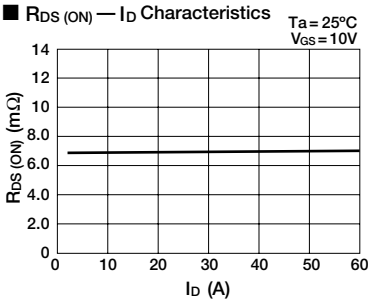
■ V_{DS} — V_{GS} Characteristics (typ.)



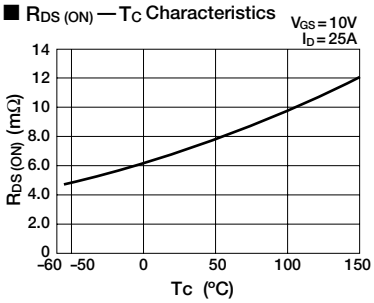
■ Re (yfs) — I_D Characteristics



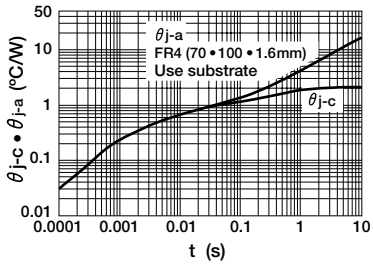
■ $R_{DS\ (ON)}$ — I_D Characteristics



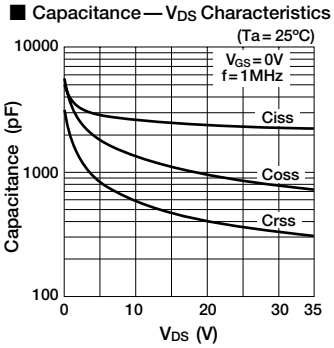
■ $R_{DS\ (ON)}$ — T_C Characteristics



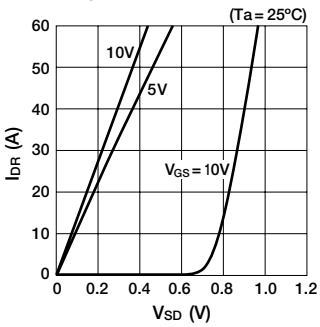
■ $\theta_{j\text{-}c} \bullet \theta_{j\text{-}a}$ — t Characteristics (Single pulse)



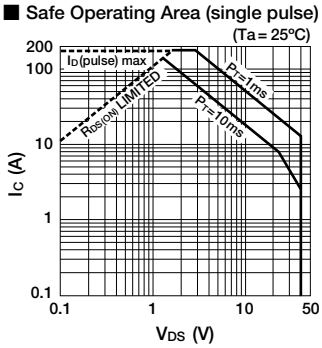
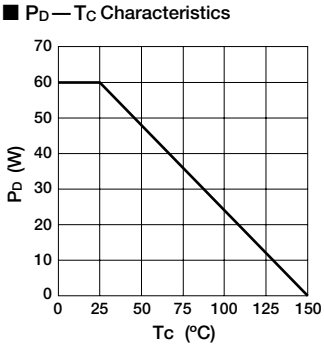
■ Capacitance — V_{DS} Characteristics



■ I_{DR} — V_{SD} Characteristics



■ Safe Operating Area (single pulse)



■ P_D — T_C Characteristics