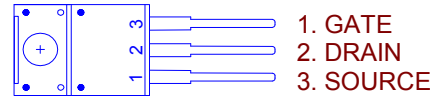
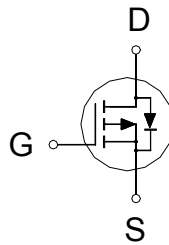


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-40V	16mΩ	-40A



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ¹	$T_C = 25\text{ }^\circ\text{C}$	I_D	-40	A
	$T_C = 100\text{ }^\circ\text{C}$		-25	
Pulsed Drain Current ²		I_{DM}	-120	
Avalanche Current		I_{AS}	-40	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	78	mJ
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	42	W
	$T_C = 100\text{ }^\circ\text{C}$		17	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta Jc}$		3	$^\circ\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		60	

¹Pulse width limited by maximum junction temperature.

²Limited by package.

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

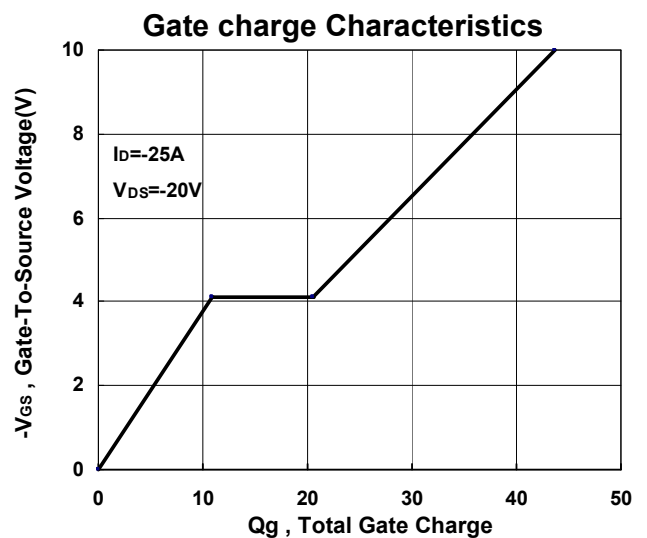
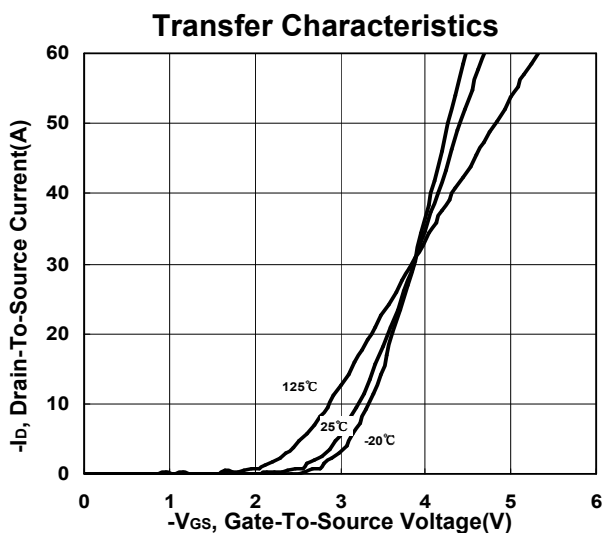
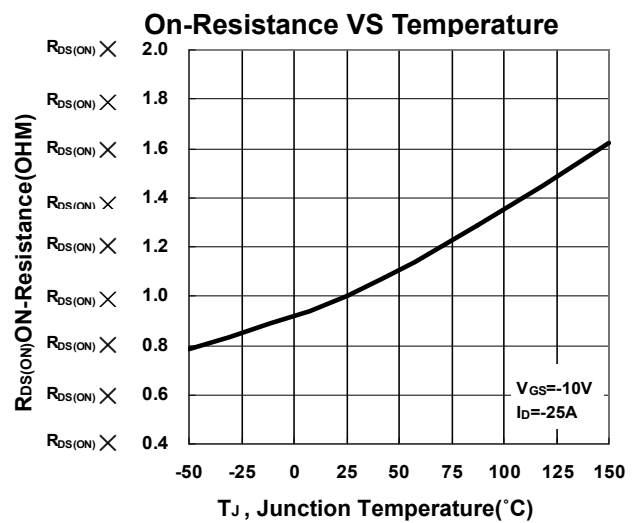
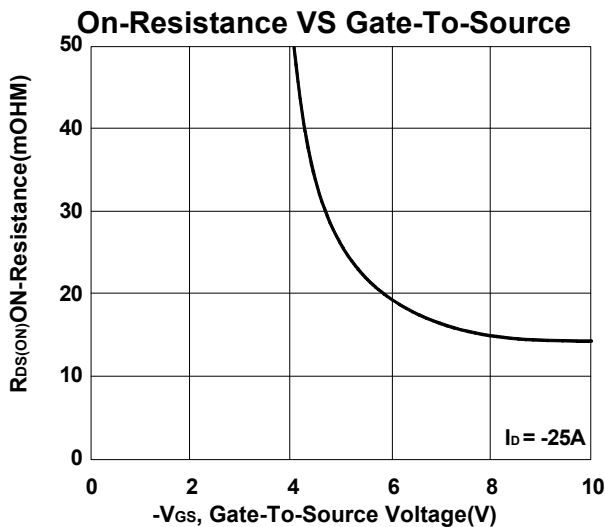
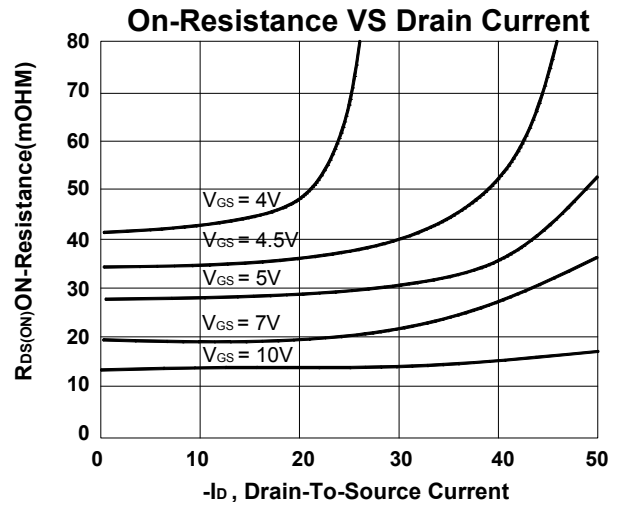
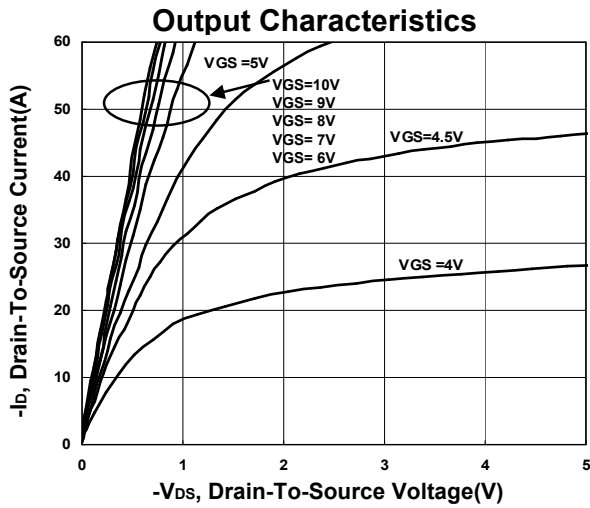
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = -250\mu\text{A}$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu\text{A}$	-1.5	-2.2	-3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$			± 250	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -32\text{V}, V_{GS} = 0\text{V}$			1	μA
		$V_{DS} = -30\text{V}, V_{GS} = 0\text{V}, T_J = 125\text{ }^\circ\text{C}$			10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = -5\text{V}, V_{GS} = -10\text{V}$	-120			A

Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = -7V, I _D = -15A	16	20	mΩ
		V _{GS} = -10V, I _D = -25A	13	16	
Forward Transconductance ¹	g _{fs}	V _{DS} = -10V, I _D = -25A	38		S
DYNAMIC					
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -20V, f = 1MHz	2310		pF
Output Capacitance	C _{oss}		438		
Reverse Transfer Capacitance	C _{rss}		320		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	4.3		Ω
Total Gate Charge ²	Q _g	V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = -10V, I _D = -25A	45		nC
Gate-Source Charge ²	Q _{gs}		12		
Gate-Drain Charge ²	Q _{gd}		11		
Turn-On Delay Time ²	t _{d(on)}	V _{DS} = -20V I _D ≅ -25A, V _{GS} = -10V, R _{GS} = 6Ω	15		nS
Rise Time ²	t _r		43		
Turn-Off Delay Time ²	t _{d(off)}		62		
Fall Time ²	t _f		50		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)					
Continuous Current ³	I _S			-32	A
Forward Voltage ¹	V _{SD}	I _F = -25A, V _{GS} = 0V		1.3	V
Reverse Recovery Time	t _{rr}	I _F = - 25A, dI _F /dt = 100A / μS	43		nS
Reverse Recovery Charge	Q _{rr}		31		nC

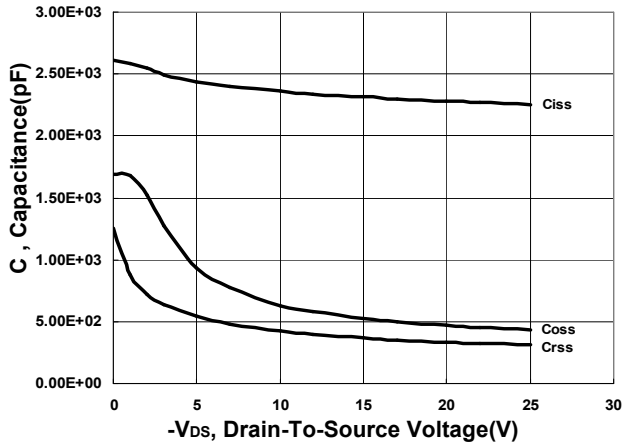
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

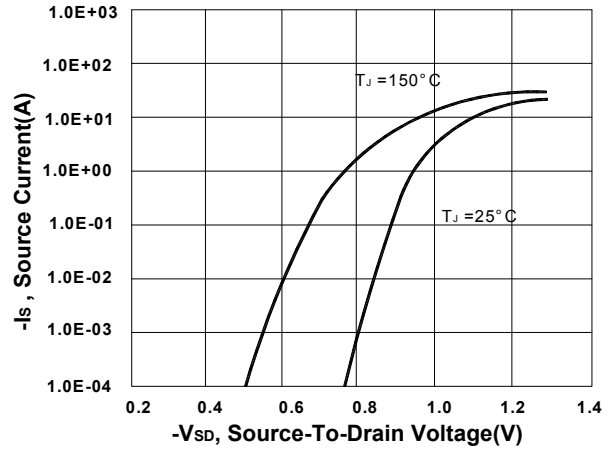
REMARK: THE PRODUCT MARKED WITH "P1604ETF", DATE CODE or LOT #



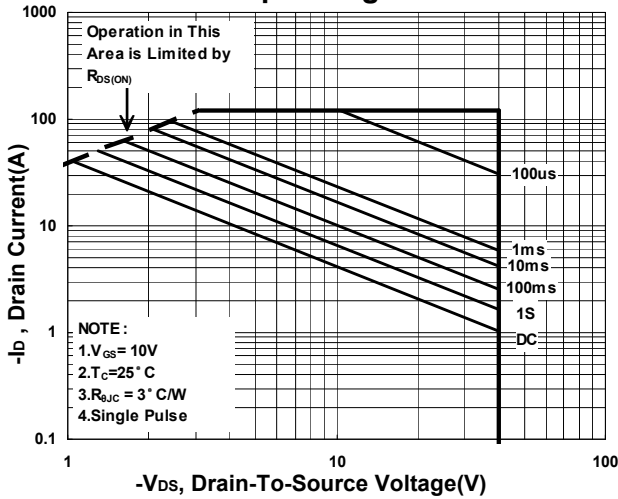
Capacitance Characteristic



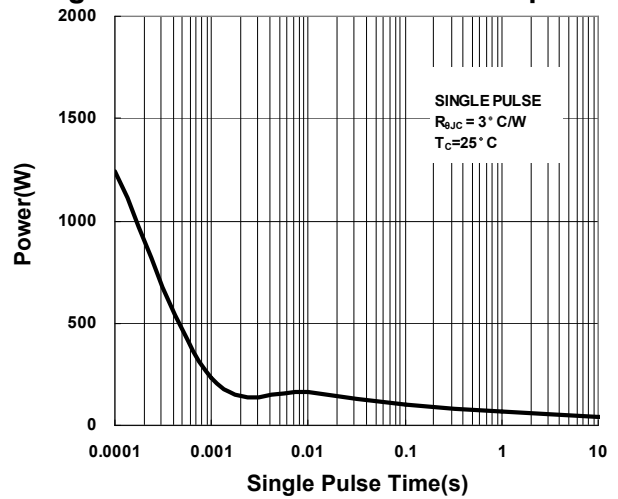
Body Diode Forward Voltage VS Source current



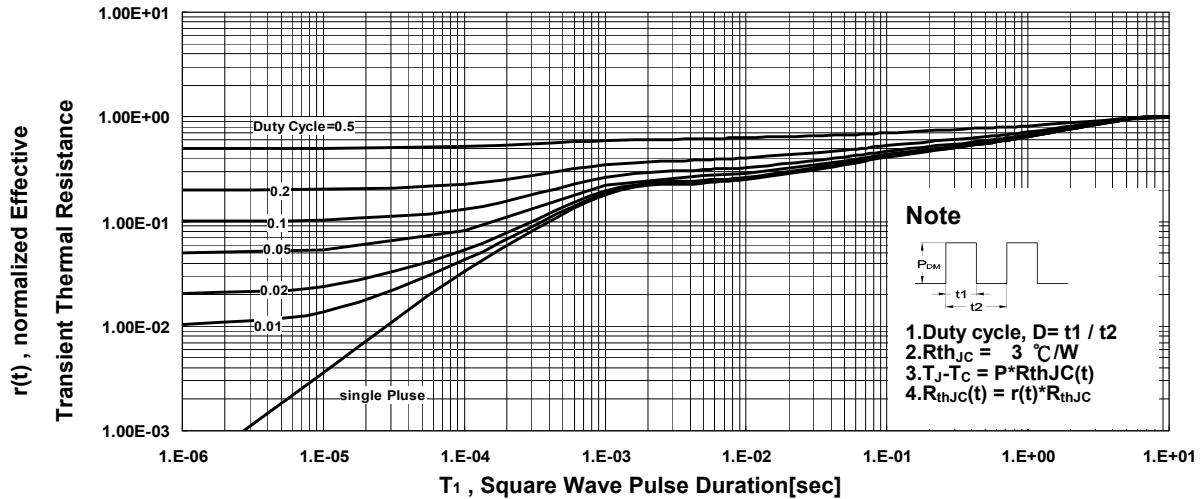
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



TO-220F (3-Lead) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	9.96	10.0	10.6	I	0.95	1.2	1.39
B	2.4	3.0	3.38	J	4.3	4.5	4.93
C	18.1	19.1	19.7	K	2.34		2.74
D	27.3	28.4	30	L	2.56		2.96
E	15.67		16.1	M	0.45		0.6
F	8.8	9.17	9.8	N		0.7	
G	0.5	0.75	0.91	O	2.8		3.4
H	2.3		2.74				

